N79-30479

(NASA-CR-150460) IMPROVEMENT OF THE MECHANICAL AND THERMAL PROPERTIES OF THE METALLIZED POLYCARBONATE CAPACITOR Final
Technical Report, 28 Jan. - 30 Jun. 1977
(Component Research Co., Santa Monica, G3/33 30905

FINAL TECHNICAL REPORT

IMPROVEMENT OF THE MECHANICAL AND THERMAL PROPERTIES OF THE METALLIZED POLYCARBONATE

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GEORGE C. MARSHALL SPACE FLIGHT CENTER, CONTRACT NAS 8-32403





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1655 - 26th STREET SANTA MONICA, CALIFORNIA 90404



(NASA-CR-150460) IMPROVEMENT OF THE MECHANICAL AND THERMAL PROPERTIES OF THE METALLIZED POLYCARBONATE CAPACITOR Final Technical Report, 28 Jan. - 30 Jun. 1977 An Barly Domestic Dissemination (Component

Unclas G4/33 52787

TITLE:

IMPROVEMENT OF THE MECHANICAL AND THERMAL PROPERTIES

OF THE METALLIZED POLYCARBONATE CAPACITOR

DATE:

AUGUST 1977

CONTRACTOR:

COMPONENT RESEARCH CO.

1655 26th St.

SANTA MONICA, CALIF. 90404

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MARSHALL SPACE FLIGHT CENTER, ALABAMA,

CONTRACT REPORT NO. -NAS. 3-18925 NAS 8-32403



ABSTRACT:

The objective of this program was to develop design and process changes which enable polycarbonate metallized film capacitors to withstand 500 thermal shock cycles while maintaining electrical characteristic integrity without becoming intermittent, and without losing hermeticity. The task was for metallized polycarbonate film capacitors designed to meet MIL-C-39022/9 and MIL-C-83421/1. The capacitor design improvements implemented were the insertion of a rubber washer between spray cap and end seal and the utilization of a flexible lead assembly. One hundred fifty (150) capacitors incorporating the design improvements were manufactured and subsequently underwent 500 thermal shock cycles. One hundred forty nine (149) capacitors survived the test. Failure analysis revealed that the lone failure was due to a poor solder joint, initially detected in pre-screening tests as having poor Dissipation Factor and Equivalent Series Resistance measurement readings. Technician's error precluded the capacitor being eliminated from the test program.

FOREWORD

This report documents all work performed by Component Research Co. during the period 28 January 1977 to 30 June 1977 for George C. Marshall Space Flight Center under Contract NAS 8-32403. The project manager at George C. Marshall Space Flight Center was Leon Hamiter. The program manager at Component Research Co. was John Conklin.

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•	TEST DATA
	FAILURE ANALYSIS
	CONCLUSIONS AND RECOMMENDATIONS

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I. INTRODUCTION

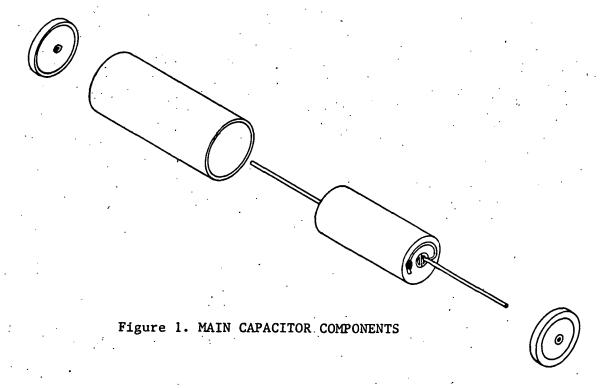
Science is continually progressing and making technological advances. To keep in step with these advances better accuracy and reliability of passive components must be assured. Demands have been made upon today's state-of-the-art capacitor that make it necessary to surpass present capacitor technology.

The requirements of the Space Shuttle Program have made it necessary to develop a polycarbonate metallized film capacitor capable of withstanding 500 thermal shock cycles while maintaining electrical characteristic integrity and hermeticity, without becoming intermittent.

II. EFFECT OF THERMAL SHOCK CYCLING ON POLYCARBONATE FILM CAPACITORS

When two materials possessing dissimilar coefficients of linear thermal expansion are fastened together and subjected to extreme temperature conditions they impart upon each other mechanical stress. The magnitude and direction of this stress is dependent on the change of temperature undergone and the exact coefficients of linear thermal expansion of the materials.

The main physical components of the capacitors in this program are the film winding, a metallic case, and two end seals.



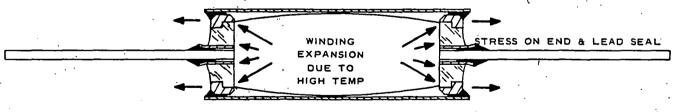
The winding consists of metallized polycarbonate film wound on a plastic core. The metallic case is a cylindrical tube of Cupronickel 30%, Alloy 715. The end seals are circular, glass-to-metal compression seals.

Polycarbonate has a coefficient of linear thermal expansion of 70×10^{-6} per°C. Cupronickel 30% has a coefficient of linear thermal expansion of 16×10^{-6} per°C.

Due to the differences of coefficients of linear thermal expansion the capacitor winding will expand a greater magnitude than the case above ambient temperature. At temperatures below ambience the winding will contract a greater magnitude than the Cupronickel case. What interests us is the expansion and contraction along the axis of the capacitor.

Let us analyze what happens during capacitor exposure to extreme temperatures:

At temperatures above ambience both the winding and case begin to expand. The winding, possessing a higher coefficient of linear thermal expansion than the case, expands a greater magnitude and therefore compresses against the end seals.



STRESS ON LEAD CONNECTION

Figure 2. WINDING EXPANDING AGAINST END SEALS DUE TO HIGH TEMPERATURE

The effect is that the solder joint bonding the lead assembly to the spray cap is pushed through the thin mantle of tin babbit. This situation is analagous to an ice skater standing on a thin layer of ice. The ice breaks away from the surface at the points of pressure, the skater's feet. So too here, the section of tin babbit under the solder joint breaks away from the spray cap surface. All this results in an intermittent connection, a poor Dissipation Factor, and subsequently after extensive exposure to thermal cycling, the occurrence of an open connection.

At temperatures below ambience the winding and case both contract.

Due to their inherent coefficients of linear thermal expansion the winding contracts a greater distance from its original size than does the case.

The effect is a "tug of war" between the core and case with the lead wire being pulled from both ends.

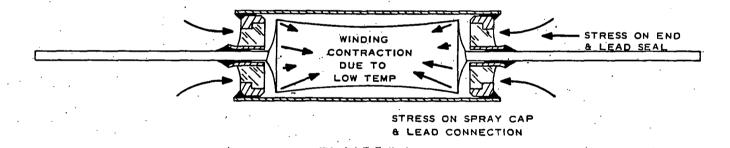


Figure 3. WINDING CONTRACTING AND PULLING LEADS FROM END SEALS DUE TO LOW TEMPERATURE

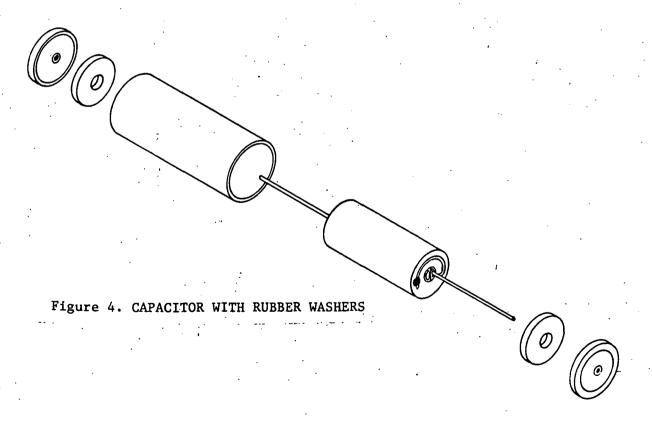
The stress along the lead wire can result in three possibilities:

- 1. The lead wire can pull away from the spray cap causing a poor connection, poor Dissipation Factor and eventually an open circuit.
- 2. The solder bead joint bonding the lead wire to the end seal becomes broken resulting in the loss of hermeticity.
- 3. Both 1. and 2. can occur.

III. PROPOSED DESIGN CHANGES

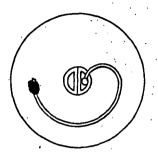
After having determined the causes which effect failure of metallized polycarbonate film capacitors due to thermal shock cycling, Component Research Co. proposed certain design changes:

1. To alleviate the problem present at high temperature (i.e. the crushing of the solder joint bonding the lead wire assembly and spray cap) a rubber washer was inserted between the capacitor spray cap and end seals.



2. To solve the problems which occur due to contraction at low temperatures

(i.e. breaking of solder bead joint and pulling away of lead wire assembly from the spray cap) a patented flexible lead assembly was utilized (Patent No. 3,260,906).



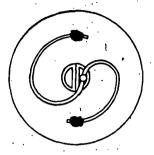


Figure 5. FLEXIBLE LEAD DESIGN

IV. ENVIRONMENTAL AND ELECTRICAL TESTS

The following capacitors were manufactured per MIL-C-83421/1:

M83421/01-	Capacitance	Voltage	Diameter		Length
-1090	.01uF	30	.170 in.	(4.32mm)	.500 in. (12.70mm)
-1174	.1 uF	30	.193 in.	(4.90mm)	.687 in. (17.45mm)
-1186	.15uF	30	.235 in.	(5.97mm)	.562 in. (14.27mm)

After incorporating the design changes outlined in Section III, the following environmental and electrical tests were performed:

A. ENVIRONMENTAL EXPOSURE

1. Accelerated temperature cycling

Twenty (20) pieces of each part number were subjected to 500 thermal shock cycles in liquid-to-liquid, at the rate of fifty (50) cycles per day. The capacitors were immersed into each liquid for sixty (60) seconds and transferred from one bath to another within fifteen (15) seconds. The temperature extremes were -55°C and 125°C.

2. Normal temperature cycling

Thirty (30) pieces of each part number were subjected to 500 thermal shock cycles in air-to-air, at the rate of one (1) cycle per hour. The dwell time at each temperature extreme was a minimum

of thirty (30) minutes. The maximum transfer time from one chamber to another was sixty (60) seconds. The temperature extremes were -55°C and 125°C.

B. ELECTRICAL TESTING

All capacitors were 100% tested for Insulation Resistance,

Capacitance Drift, Dissipation Factor and Equivalent Series Resistance.

Measurements were taken as follows:

- Insulation Resistance at rated voltage @25°C and @-55°C. I.R.
 @125°C at 50% rated voltage.
- 2. Capacitance Drift (at 1KHz) @25°C, @-55°C and @125°C.
- 3. Dissipation Factor (at 1KHz) @25°C, @-55°C and @125°C.
- 4. Dissipation Factor (at 10 KHz) @25°C, @-55°C and @125°C.
- 5. Equivalent Series Resistance (at 100KHz) @25°C.

C. VISUAL INSPECTION

All capacitors were visually inspected at 10X magnification for damage and solder defects before and after each cycle period.

D. HERMETICITY TEST

Capacitors were tested for hermeticity per MIL-STD-202, Method 112, Condition C, Procedure IIIA, followed by Condition A.

E. MEASUREMENT POINTS

Electrical, visual, and hermeticity test measurement points occurred as follows:

- 1. Accelerated temperature cycling- measurements were taken after 0, 50, 150, 250, 350, and 500 cycles.
- 2. Normal temperature cycling- measurements were taken after 0, 20, 140, 260, 380, and 500 cycles.

V. TEST DATA

In order to pass qualification tests per MIL-C-83421/1, Level 1, metallized polycarbonate film capacitors are required to survive ten (10) thermal shock cycles.

The capacitors listed as rejects on the proceeding data sheets are not failures but are parts which, after extensive thermal shock cycling, have fallen out of specification as delineated in MIL-C-83421/1.

After 500 thermal shock cycles, all parts passed a hot oil seal test as set forth in MIL-STD-202, Method 212, Condition A. Out of a total of one hundred fifty (150) capacitors, sixteen (16) had a leak rate faster than 1×10^{-6} Atm./Cm.3/Second, the leak rate limit set forth in MIL-STD-202, Method 112, Condition C, Procedure IIIA. All capacitors had a leak rate less than 1×10^{-4} Atm./Cm.3/Second.



TEST REPORT SUMMARY

Thermal Shock
Liquid to Liquid
500 Cycles -65°C to +125°C

TEST NO.

Report No. XT-1218-B

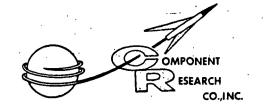
OMPONENT	1 500 Cyc	cles - 65°C to +1	25°C	<u></u>		
ESEARCH CO.,I			•	PAGE	11 OF	188
PROD. NO0237G		CUSTOMER NASA,	Marsl	nall Spac	ce Flight	Center
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LOT SIZE 20		CUSTOMER P/O_	IAS8-32	2403		
C.R.C. P/N <u>M83421/01-117</u>	'4R (C.R.C. S/O 7	704 - 356	522		
DATE COMPLETED 5/5/77					· h	
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Phone (213) 829-3615

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TEST:	sulation Re	sistance	LAB SUPVR	3	C.R.	.c. P/N M8	3421/01-11	74 R	•••
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011	8	5	9	15		12	10		
013	. 1.2	8	10	13		13	17		
013	14	5	15	24		29	10		
014	3	6	12	9		11	16		
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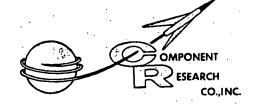


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		ON RESISTAN	CE WITH THI	ERMAL SHOCK	(- 55°C t	o +125°C)						
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Accele	erated Ther	mal Shock	oer TP-1006		''		, , , , , , , , , , , , , , , , , , , ,	1	
(Liqui	id to Liqui	d) 500 cyc	cles					. •	
-55 to	o +125°C (2	mins. per	cycle)						
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003	29	13	10	7		20	15		
003	21	15	16	8		20	15		
004	20	15	17	9		19	18		
005	25	15	16	8		21	11		
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003	1150	470	630	870		710	470			
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014	7	280	300	410		490	250			
015	l / .	200	350	460		330	420			
06	430	310	220	460		400	310			
TE-ST		3-8-77	3-14-77	3-23-		4,5.77	5-6-11			
TEST	3:2-17			Ser Se		200	1	1		
BY	3	/V6.6/	\n. \(\qq \	1 ベン		レン	53	1.	I	



Phone (213) 829-3615

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Custo	mer's Name:	: NASA		s/0 - 704	-35622		SHEET 17	OF 188				
TEST		istance @ 12) E ° C	C.R	.C. P/N	M83421/01-						
	minal to Te		2 9 C		CUST P/N							
TEST NO.	XT 1218-E				PROD. NO. 0237G P/O NO. NAS8-32403							
	1		'F WITH THE		SHOCK (-55°C to +125°C)							
s/N	Initial I.R.	After 50 Cycles	After 150 Cycles	After 250 Cycles	After 350 Cycles	After 500 Cycles						
011	510	350	240	610	400	350						
018	630	330	280	460	630	430						
019	630	330	370	550	420	210						
030	230	210	150	250	250	380						
031	460	180	130	160	370	280	. '					
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•	<u> </u>	·		·								
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			-									
TEST DATE TEST	3-2-17	3-8-17	3-14-77	4-4-71	4-15-11	56-11						
BY	() () () () () () () () () ()	90	() () () () () () () () () ()	90	<>>,	(3)	<u> </u>					



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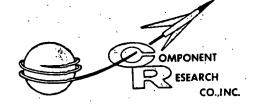
Cust	omer's Name	: NASA		s/0 -	704-35622		SHEET 18	of 188
TEST:			LAB SUPVR	200		83421/01-1	174R	
	citance Dri mal Shock	ft with	ENGR.	//	JST. P/N			
· 	o. XT 1218-1	······································		1~1)237G		 .
TEST T		<u> </u>	O.A.		. · · · · · · · · · · · · · · · · · · ·	IAS8-32403	i i	
TEST V			-		CIFICATION:			
SPECIAL		· · · · · · · · · · · · · · · · · · ·					-	
Accei	lerated Ther	mal Shock	per TP-1006		MIL-C-83421	l, Para. 4.	7.8	•
(Liqu	ıid to Liqui	d) 500 cy	cles	. •			•	·:
	°C to +125°C	(2 mins.	per cycle)		·	•		
ACCEPTAN	CE L'MITS:			EQ	UIPMENT USED:		Model No.	ECN No.
	uf thru .ll				npedance com		G.R. 1654	1271
	500 cycles				pacitor dec	ade	G.R. 1413	1274
	, there are limits for			acıtance				
" " "	Timites 101	CITIS CONGI	CTOIL.			••		
	•	·				·		
	•				• .			
						•		•
	PERCENT C	APACITANCE	CHANGE WIT	H THERMAL	SHOCK (-55	°C to +125	°C)	,
S/N	Initial	After	After	After	After	After	T	
	Cap.	50	150	250	350	500		1.
	in uF	Cycles	Cycles	Cycles	Cycles	Cycles		
001	.098712	1.095	+135	+.095	7.125	+095		
002	099475	t. /	+.195	+. 12	1.19	11/15	<u> </u>	
003	000202	1.0/5	7.19	t. 12	1.115	tel.	·	
004	1099-443	1.075	+165	+105	1.105	t.09.5		·
005	1 // .	l / .	+ 17	+1	109	+065		
006	000052	1.015	1.165	t.1.	1.135	+/		
cos6	090606	1.085	1.135	+.065	1.055	1.04		
009	.098913	1.085	1:075	1.055	+065	1.045		
010	.00130	t. /	t. 1.5.5	+015	1.1625	+42		
011	.099696	T.01	7.165	+ 085	7./3	7.095		
012	09580	r.095	+155	t.105	t./3	1.115	`	
013	00837	1.04	r.21	+.125	t.162	t.135		-
014	.099625	+.16	7.32	t:23	1.275	r.245		
015	009665	1.045	+.205	+.135	t.160	+14		
016	100155	+025	t.19	+.145	tila	+.135		
TEST DATE	2-24-77	3-7-17	3-10-77	3-23-7-	4-19.71	5-2-77		
	W-27-//		L 1-/// / /		1 17 7 7 7 7 7	1 - 1 - 1	_L_	



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/ Custor	mer's Name:	NASA		s/0 - 70	4-35622		HEET 19	OF 188
Capa	citance Dri mal Shock		with	c.	R.C. P/N	183421/01-1	174R	
11161	IIId I SHOCK		·	P:		0237G	·	
TEST NO.	XT 1218-B			P/	O NO.	NAS8-32403	! 	
]	PERCENT C	APAC I TANCE	CHANGE WIT	H THERMAL	SHOCK (-55	°C to +125	°C)	·
S/N	Initial Cap. in uF	After 50 Cycles	After 150 Cycles	After 250 -	After 350	After 500		
017	.099942		t. 185	Cycles	Cycles +: 145	Cycles +. 105	·	
018	-099998		1.2	1.125	t./3	7./		
0,9	.100029	1	t.16	+.115	t.125	+105		•
020	.099631	t. R)	+155	1.00	+.105	1.075		
021	.099916	+.115	1.075	1.095	t. 1.	1.07		
	1,7							
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					1.			
TEST DATE	2-24-77	3-7-17	3-10-77	3-23-77	4-19-17	5-2-77	,	
TEST BY	1203	1703	708	77	FN CP	ું∾ફે		



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TWX 910-343-6864

		•					:				
	mer's Name:	NASA	II AB SUBUR S	s/0	- 70	4-35622		SHEET 20	QF	188	
TEST:	itance Drif	F+ wi+k	LAB SUPVE. 23		C.R.	C. P/N	183421/01-	1174R		٠٠	
	al Shock	it with	ENGR.	Z	cus	T. P/N					
TEST NO		18-B	9.4.	<u> </u>	PRO	D. NO.	0237G				
TEST T	EMP: -55°C		Sin	<u> </u>	P/0	NO	NAS8-3240	3 1			
TEST V	11.40		7 '		SPECI	FICATION:					
SPECIAL			<u> </u>		1	•		•			
Acce	lerated The	rmal Shock	per TP-100	6	M	IL-C-83421	, Para. 4	.78	•		
, ,	uid to Liqu	, -									
	to +125°C	(2 mins. p	er cycle)		EQUIDATENT HEED.						
ACCEPTAN	CE LIMITS:			•	Model No. ECN No.						
Th	are no est	ahliahad 1:	mien fam i	_:+:-1		edance comp cision dec		G.R. 1654	1331		
	itance and S			niciai	1	citor	aue	G.R. 1413	1387		
			,-			erature t	est	Statham	130		
						nber		SDG-1	. =00		
					The	mometer	•	Marshall J E485	1588		
_						•	•	J E405			
					<u>.</u>						
	PERCENT C	APAC ITANCE	CHANGE WIT	'H THERM	AL S	HOCK (-55	°C to +125	5°C)			
s/N	Initial	After	After	Afte	т Т	After	After				
	Cap.	50	150	250		350	500		`, ·		
	in uF	Cycles	Cycles	Cycl	,	Cycles	Cycles				
001	.097.276	t.045	1.035	1.09		t. 155	1.125				
002	.008/13	1.05	1.005	t. 213	- 1	T.24	1.225				
as	.001830	t.055	1.095	+18		1. R.3 _	±16				
004	.091982	1.065	1.085			1.64	1.175			,	
005			i	+.19 +.11		t.C	1.14				
	.097357	+075	1.07	+17					 -		
000	.098527	1.055	108	7		1.2	7.17				
008	098211	7.04	1.035	1.01		+.125	r.065	- '			
cog	097537	+045	1.045	7:13		+175	+,13		 		
010	097709	1.04	1055	+15		+.15	t.64		 		
011_	098400	+025	1.065	7.16	5	<i>t.15</i>	1.23		-		
612	000483	1.065	r.085	t.16		7.23	7.26				
013	.cg8 433	T.095	1.13	120	5	7.27	7:22			<u>-</u> .	
014	.098365	1.085	+.125	T.19:		T.23	+.17				
015	.098.639	1.115	1.165	1.21		T. 25	+.19				
016	//	t. 12	+.195	t. 23		t. C7	t. 2				
TEST	.098777		1			. /		 		•	
DATE		3.8.11	3-16-77	4-4-	11	4-15-77	55.77	<u> </u>	 		
TEST BY	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	208	Trail	50.5	,	(Rug)	700		1		



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TWX 910-343-6864

GENERAL DATA SHEET

Custo	mer's Name:	NASA		s/0 - 704	-35622		SHEET 21	OF 188			
	itance Drif	t @ - 55°C \	vith Therma	°' cu	C.R.C. P/N <u>M83421/01-1174R</u> CUST P/N PROD. NO. 0237G						
TEST NO.	XT 1218-	В	:		P/O NO. NAS8-32403						
	PERCENT C	APACITANCE	CHANGE WIT	TH THERMAL	SHOCK (-55	K (-55°C to +125°C)					
S/N	Initial Cap. in uF	After 50 Cycles	After 150 Cycles	After 250 - Cycles	After 350 Cycles	After 500 Cycles					
011	.098.585	1.095	+18	7.195	+.235	7.16					
018	.098546	t. 125	1.155	7.18	t. ER5	+.135					
019.	.008.650	7.1	7.16	+.185	7.19	+.1					
020	.098198	1.115	+105	T.205	+.19	7.105					
021	098557	1./3	+.105	1.26	+.16	+085					
					:	<u> </u>					
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TEST .		· 		<u> </u>	· .						
DATE TEST	3-1-77	3-8-11	3-16-77	4-4-77	4-15-1-1	54-17		·			

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TWX 910-343-6864

Custo	mer's Name:	NASA		S/0	- 7	04-35622		SHEET 22	OF	188	
TEST:		•	LAB SUPVR.	弹	C.R	.C. P/N	183421/01-	1174R			
Capac	itance Drif	t with	ENGR.	1)	4	T. P/N					
TEST NO	al Shock . XT 1218-	·R	Q.A. ()	<u> </u>		•	0237G		· ·		
TEST TI			- 1	<u> </u>	ı		NAS8-32403	i i			
TEST V			1			IFICATION:			· · · · · · · · · · · · · · · · · · ·		
SPECIAL			1		1	•		-			
Acce	lerated The	rmal Shock	per TP-1006	6 .	M	IIL-C-83421	, Para. 4.	7.8			
(Liq	uid to Liqu	id) 500 d	ycles	•] .			* - ***			
	to +125°C	(2 mins. pe	er cycle)								
ACCEPTAN	E LIMITS:				EQUIPMENT USED: Model No. ECN No.						
T.		 -61:-6-4 1:		- ! 4 ! - 1		edance com	parator	G.R. 1654	1331		
	are no esta itance and %			nitiai		cision dec	ade	G.R. 1413	1337		
Capac	cance and /		· · · ·	, - '	1	pacitor	net :	Statham	130		
				:		perature to mber		Statnam SDG-1	0 ر ا		
	•	•				rmometer		Marshall	1588		
·								J E485	•	ļ	
										ł	
	DEDCENT (CHANGE WIT	TU TUEDI	<u> </u>	CHOCK (E	T°C +- 12	۲°۵\			
S/N	Initial	After	After	Afte		After	After	5 ()	Τ		
3/14	Cap.	50	150	250		350	500			j	
: · ·	in uF	Cycles	Cycles	Cycle	es	Cycles	Cycles				
001	099011	1.02	+.025	1.06	٠.	1.05	1.05		 		
002	099995		0.00	+06		1.045	1.04				
CC3	.000501	t.02	+.025	t.04	_	+035	+.035				
004	.099759	1.035	+.03.5	1.07		t.06	1.065				
005	.099080	1.015	1.01	7.02		+.015	t.015		1		
_	77						i				
ach	100050		r.C2	7.07		t.06	1.065	· · · · · ·	1		
COB	.090,796		+015	1.04		t.03	1.025	 	 		
009	.000064	0.00	-01	t.015		1.00	7015	 	-		
010	.099546	1.015	-015	1.00	5	+1.035	t. 6		 		
011	.100028	<i>t.03</i>	T.005	1.07	2	1.085	1.06	 	-		
012	100334	4.01	+.025	1.01		t.055	1.055				
0/3	100190	+.01 .	+.03	1.06	5	T.05	t.05		1	-	
014	100158	t.01	t.015	tolo		+.05	t.05	·	<u> </u>		
015	.100098	1.015	+.015	+.05		+04	t.04	<u> </u>		• .	
016	100564	t.015	1:03	1.01		t.05	106				
TEST	3.2.71	38-77	3-15-77	4-4-	17	4-15-77	5-6-17				
TEST	2.6		・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・	(3)	//	~ ' '	' '		1		
ВҮ		Con Co	AP TO	<u> </u>		(((((((((((((((((((Too of		1		



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Custo	omer's Name	: NASA		s/0 - 7	704 -	35622		SHEET 23	OF 188
Shoc	1010 5	ft @ 125°C	with Therm	na I	CUS PRO	T P/N	83421/01-1 237G		
TEST NO.	XI 1210-6	· · · · · · · · · · · · · · · · · · ·			P/0	NON	AS8-32403		
	PERCENT CA	APAC ITANCE	CHANGE WIT	H THERMA	AL S	HOCK (-55	°C to +125	°C.)	•
S/N	Initial Cap. in uF	After 50 Cycles	After 150 Cycles	After 250 Cycle	-	After 350 Cycles	After 500 Cycles		
017	100378	0.00	+015	1.05	5	+.035	404		
018	100394	- 005	+015	-005		-005	-005		
00	100563	-005	-015	1.025	5	1.005	1.015		
020	099967	-01	-01	+.03		+015	t.025	·	
021	100130	-015	-015	-015		0.00	1.01		
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TEST DATE	3-2-11	3-8-71	3-15-14	4.4-1	7	4-15-71	5.6-17		
TEST BY		[n. 8]	199	100 g		4-15-77	708		



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TWX 910-343-6864

Custo	mer's Name:	: NASA	/	S/0 -	704-35622	S	HEET 24	of 188
TEST:		:	LAB SUPVR	7 6	C.R.C. P/NN	83421/01-1		
	pation Fact	tor @	ENGR.		CUST. P/N	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
1 KHZ	XT 1218-		Q.A.			0237G		
TEST TI	0 = 0 0	· · · · · · · · · · · · · · · · · · ·	- 2			NAS8-32403	1 .	•
TEST V	NIA	; -		<u></u>	ECIFICATION:			
SPECIAL		 				•	•	
	erated Ther				MIL-C-834	21, Para. 4	+.7.9	
	id to Liqui							
1.	to +125°C	(2 mins. pe	er cycle)				·	
	E LIMITS:	3.50/			DUIPMENT USED:	-	lodel No.	ECN No.
	al limits - 500 cycles		liquid the		mpedance comp		I.R. 1654	1331
shock	there are	no establis	hed % D.F.	limits	recision deca	ade G	i.R. 1413	1337
					,			
						•		•
			•				ORIGIA	
1		•			•		OF POOL	Pa
						•	SOR .	OF TO
	PERCENT D	ISSIPATION	FACTOR WIT	H THERMAL	SHOCK (-55	°C to +125	ORIGINAL OF POOR	ALITY
S/N	Inițial	After	After	After		After		
	D.F.	50	150	250	350	500		
		Cycles	Cycles	Çycles	Cycles	Cycles		
001	.07	.085	.085	.085	.075	.08	<u> </u>	
003	.07	.085	.085	.085	1 '	.015		
03	.09	.075	.085	.OE.5		.095		
004	.06	.075	.085	-08	.08	.015		
005	.06	.095	.08	.08	-08	.075		-
octo	.06	.075	.075	.075	.075	.065		
008	.06	.08	.085	·OB	.68	.015		
009	.06	.08	,0B	.08	.08	1015		
010	.06	.085	.085	.08	,075	//		
011	.06	.065	,08	.075	7.	.07		
013	.06	045		. /	.075	07-	 	
1	,	075	.08	.07.5	1.075	101/3		
0/3	006	.075	.075	08	.07.5	1075	 	
014	.06	.08	·085	.08	10/3	1045	·	
015	.06	1075	085	.07=	_ /	-07.5	 	
016	.06	.07.5	1055	07	5 .075	075	ļ <u> </u>	
TEST DATE	2-24-11	3-77	3-10-77	3-23-7	14-19-14	5-2-17		
TEST BY	TOR	77.08	FIZE	7.00	7.8	TOR		



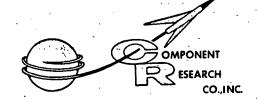
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GENERAL DATA SHEET

Custo	mer's Name	: NASA	. ,	s/0 - 704	-35622	S	HEET 25	: OF. 188		
Diss	•	ctor @ lKHz	@ 25°C	C.R.C. P/N M83421/01-1174 R CUST P/N PROD. NO. 0237G P/O NO. NAS8-32403						
1231 NO.			. 54 0 50 5 444							
S/N	Initial D.F.	DISSIPATION After 50 Cycles	After 150 Cycles	After 250 Cycles	SHOCK (-5 After 350 Cycles	5°C to +125 After 500 Cycles	5°C)			
019	.06	.08	.085	.085	075	.075				
OB_	07	.08	.08	.08	.08	.075				
010	.06	.075	.08	.075	075	.015				
030	.06	.085	.085	.08	.08	075				
021	.06	.085	.08	.095	.08	.075				
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TEST DATE	2.24-17	3.7-71	3-10-77	3-23-17	4-10-77	5-2-77				
TEST BY	708	1-0	I NE	mag		TOP				

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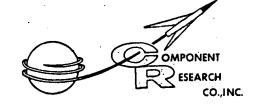


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TWX 910-343-6864

Custo	omer¹s Name	: NASA		∕c _∞ S/0	7	04-35622		SHEET 26	OF 188		
TEST:	_		LAB SUPVR.	EF 7	C.B	.C. P/NM	33421/01-	-1174R	, .		
Diss	ipation Fac		ENGR. A	/	ł	T. P/N					
						D. NO. 0					
	XT 1218-		Q.A.		B/0	NON	458-32403				
TEST TI			-			IFICATION:		<u> </u>			
TEST V			<u> </u>	 	13, 50	ir iça i ion,					
Acce	lerated The	rmal Shock	per TP-100	6 .		MIL-C-8342	l. Para.	4.7.9			
(Liqu	uid to Liqu	id) 500 c	ycles	•	-		,				
-55°C	to +125°C	(2mins. pe	er cycle)								
ACCEPTANG	E LIMITS:	<u> </u>			EQUIF	MENT USED:		Model No	ECN No		
	are no est	ablished %	D.F. limit	ts for	Impedance comparator G.R. 1654 1331						
this	condition.				cision deca		G.R. 1413	1337			
			•			acitor			•		
				Tem	p. test cha		Statham	130			
			•		The	rmomo* o r		SDG-1 Marshall	1588		
					ine	rmometer		J E485	,		
		•					•	0 2105			
					<u> </u>		·				
	PERCENT	DISSIPATION	FACTOR WIT	TH THERN	4AL	SHOCK (-59	o°C to +1	25.°C)			
S/N	Initial	After	After	After		After	After				
5,	D.F.	50	150	250		350 ⁻	500				
		Cycles	Cycles	Cycle	es 🗄	Cycles	Cyc:les				
001	.36	.35	.39	, 35	-	.35	.34				
,											
003	.35	.34	.39	.36	_	134	34				
003	.36	.35	35	.3.5		.35	35				
004	1	.34	.35	35		.34	1.34		· · · · · · · · · · · · · · · · · · ·		
005	136	.3.5	36	.36	,	.35	.35				
006	.34	, 33	.34	.34		-33	<i>•33</i>				
008	.36	√35	.38	.365		,36,	-35				
009	.36	.34	.35	1.36	,	.34	.3∡				
010	36	.35.	.35	35		.3.న	38				
011	34	<i>3</i> 3	,33	.34		.33	. 4				
			.44	.35		.34-	.36				
012	.35	.34						- 			
0/3		.34	.36	.39		.3.4	36				
014		.34	·35	.35		.34	36				
015		.34	.35	.3.5		134	<u>.35</u>				
0,6	.36	.34	.35	.35	5	.34	.36				
TEST DATE	3-17	3-8-77	3-16-17	Lat -	٠. ر	4-15-17	55-7				
TEST BY	(gris)			7-7-7	/		, ,				
ВҮ	(5)	Q d'u	\%\ ⁷	\(\frac{\chi_{\text{2}}}{\chi_{\text{2}}}\)	?	(10 mg	(3)		<u> </u>		



Phone (213) 829-3615

TWX 910-343-6864

Custo	omer's Name	: NASA		s/0 - 704-	35622	\$	SHEET 27	OF 188
Dissi	pation Fac	tor @ lKHz (0 − 55°C	cus	I.C. P/N	83421/01-11		
TEST NO.	XT 1218-B		. :		00. NO. <u>0</u>	23/G AS8-32403		
	PERCENT	DISSIPATION	FACTOR WI	TH THERMAL	SHOCK (-5	5°C to +125	5°C)	
S/N	Initial D.F.	After 50 Cycles	After 150 Cycles	After 250 Cycles	After 350 Cycles	After 500 Cycles		
017	.35	.34	.35	.35	.35	:36		
018	.36	.35	35	36	.35	.34		
019	.34	<i>• 3</i> 3	.34	.34	.34	34		
030	-3lp	.34	.૩૬	.4	.34	362		
021	.36	.34	.36	.35	-35	.36		·
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					,			-
TEST DATE	3-1-71	3.8-77	3-16-77	4-4-77	4-15-17	5-9-17		
TEST BY	15.3/ <	57	() () () () () () () () () ()	(Sg)	(3)	50		·



Phone (213) 829-3615

TWX 910-343-6864

Custo	omer's Name	: NASA		<u>~</u> \$/0	- 7	704-35622	Sł	HEET 28	OF 188		
TEST:		· ·	LAB SUPVR.	EFT -	CO	.C. P/NM	83421/01-11				
Dissip	ation Fact	or @ IKHz	ENGR.	// _	i i	ST. P/N		7-11	· · · · · · · · · · · · · · · · · · ·		
TECT NO	. XT 1218-	D		<u> </u>	PROD. NO. 0237G						
	12500		Q.A.	4	P/O NO. NAS8-32403						
TEST TE		• •				IFICATION:	 				
TEST VO		 	<u> </u>								
Accele (Liqui -55°C	erated Ther d to Liquid to +125°C	mal Shock p d) 5 0 0 cy (2 mins. pe	cles	;	MIL-C-83421, Para. 4.7.9						
ACCEPTANC					EQUIPMENT USED: Model No. EC						
	There are no established % D.F. limits for this condition.					Impedance comparator G.R. 1654 Precision decade G.R. 1413 capacitor					
						p. test cha		atham G-1	130		
			•		The	rmometer	Ma	rshall E485	1588		
							· ·				
			FACTOR WIT	TH THER	MAL	SHOCK (-5	5°C to +125	°C)			
S/N	Initial D.F.	After 50	After 150	Afte 250		After 350	After 500				
	5.1.	Cycles	Cycles	Cycle		Cycles	Cycles				
001	.025	.03	.03	.06	·	.03	025	·			
002	.035	.035	.035	.04	5	.035	.035				
003	025	.03	.085	.03	5	.03	.03	٠.			
004	025	.03	.03	.03		.03	.03				
005	.025	.03	.055	.03		.03	.025				
006	.03	03.5	.035	.04		A35	.035				
008	.025	.03	.065	.03		.03	.025	1			
000	.025	.03	.03	0.3		.03	025	,			
010	.025	.63	.03	.03	·	.04-	04				
011	.035	.03	,035	-03	5	.03	.03				
013	.03	.035	.035	103	35	.035	.03				
013	.03	.035	045	.03	<u>5</u>	.035	.03				
014	.03	.035	.035	.03	5.	.035	.035				
015	.03	.035	.035	.03	5	.035	035		<u> </u>		
016	.025	.03	.035	· <i>C</i> :3	5	.03	.03				
TEST Date	3-2-27	3-8-11	3-15-77	4-4-	17	4-15-77	5-6-17		·		
TEST BY	(30)	To Call	Took	[3]		3	1 0 C				
-		(>	1	1-100		-1.37	V				



Phone (213) 829-3615

TWX 910-343-6864

Custo	mer's Name	: NASA	•	s/0 - 704-	-35622	s	HEET 29	OF 188
TEST			10500	C.F	.c. P/NM			, .
Dissip	ation Facto	or @ IKHz @	+125°C		ST P/N			
		·			D. NO. 0	237G		
TEST NO.	XT 1218-	<u> </u>	:	li li	NON	AS8-32403	1	
	PERCENT	DISSIPATION	FACTOR WI	TH THERMAL	SHOCK (-5	5°C to +125	s°c)	
S/N	Initial	After.	After	After	After	After		
	D.F.	50 Cycles	150 Cycles	250 Cycles	350 Cycles	500 Cycles	· ,	
017	C: 2							
017	.03	.03.5	.035	.035	.035	.035		,
018	.03	03.5	.035	.035	.035	.035		<u> </u>
019	.035	.035	.04	.04	.035	.035		
020	.025	.03	.03	103	.03	. <i>0</i> 3		
021	.03	.035	.035	.035	1035	.035		
							,	
		<u> </u>		·		·		
						· ·-		·
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75.57					ļ			
TEST DATE	3-2-11	3-8-77	3-15-77	4-4-77	4-15-72	5-6-17		
TEST By	- GN	(See	Too B	(Sug)	1200	1208]	



Phone (213) 829-3615

TWX 910-343-6864

	mer's Name:	NASA		/ s/ ₁ 0 -	704-35622	s	HEET 30	OF 188		
TEST:			LAB SUPVR.	W.	C.R.C. P/N	M83421/01-1	1174R			
Dissip	oation Facto	or @ 10 KHz	ENGR.		CUST. P/N			· · · · · · · · · · · · · · · · · · ·		
TEST NO	XT 1218	-B	Q.A.			0237G		·		
TEST TE	EMP. 25°C			F	P/O NO.	NAS8-32403	<u> </u>			
TEST V			` .	Si	PECIFICATION:					
SPECIAL							•			
	erated Ther id to Liqui		er TP-1006 :yċles		MIL-C-83421	, Para. 4.	7.9			
	to +125°C			Ì						
1 .	E LIMITS:			E	EQUIPMENT USED:					
Initia	al limits -	. 15%	•	[]	Impedance comparator G.R. 1654 ECN No.					
After	500 cycles	liquid to		rmal F	Precision dec	•	G.R. 1413	1337		
shock	there are	no establis	hed % D.F.	limits	capacitor					
					• *		-	j		
				· . }		•				
ĺ				· .		•				
			,		• .					
	PERCENT D	ISSIPATION	FACTOR WITH	- THERMAI	SHUCK	(_EE°C	to +125°C)			
s/N	Initial	After	After	After	After	After	10 +125 0	<u> </u>		
3/14	D.F.	50	150	250		500				
		Cycles	Cycles	Cycles	Cycles	Cycles				
001	.18	.185	.185	, 215	.195	205				
002	.18	19	.185	.225	.215	.215				
003	.18	./8	.195	-22	.215	2				
004	.18	.185	.195	.225	1215	.21	<u> </u>			
105	.17	165	.185	.215	.20	12				
colo	.18	.18	.185	.22	121	.195	·			
008	.18	.18	185	1215		.195				
ccq	.17	.175	.175	· · C1.	, E	195	<u> </u>	·		
010	.18	.185	185	.2.15	.2	.195	<u> </u>			
011	.18	.155	.18	.205	.19	1165	 			
012	.17	.195	.205	.215	.195	3				
013	.17	165	1175	.21	.205	.215	ļ	÷		
04	.19	.19	205	123	.215	.21_				
015	.17	./8	.21	.215		./85	<u>.</u>			
6.6	.16	./55	.175	.195	19	.EZ	ļ.	·		
TEST DATE	2.24.77	3.7.77	3-11-17	3-23-7	7 4-10-17	52-17				
TE ST			(1)	رز کی		Q is				



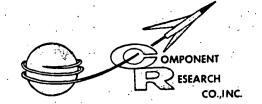
Phone (213) 829-3615

TWX 910-343-6864

GENERAL DATA SHEET

TEST	mer's Name:		:	s/0 - 704-3		83421/01-1		OF 188
Dissip	oation Facto	or @ 10 KHz	@ 25°C		.C. P/N T P/N	33421/01-1	1/41	
	·	· ·				237G	· · · · · · · · · · · · · · · · · · ·	
TEST NO.	XT 1218-B	3		•	· · ·	AS8-32403		
	PERCENT I	DISSIPATION	FACTOR WI	TH THERMAL S	SHOCK	(-55°C	to +125°C)
s/N	Initial D.F.	After 50 Cycles	After 150 Cycles	After 25 0 Cycles	After 350 Cycles	After 500 Cycles		
017	.19	.195	.205	. 235	.22	. 205		
018	.20	-185	.18	1215	,205	.19		
019	.16	.17	.18	205	.2	195		
020	.18	.185	.19	.215	.2/5	iz		
021	.19	.205	.19	1225	.21	.21		
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	·				• .	"		
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				`				
TEST DATE	2.2X-11	3-2-22	3-11/81	3-23,77	4-17-77	5.2-77		
TEST BY	W. W.		(go ti	(koū)	(Kar			

F-634-2

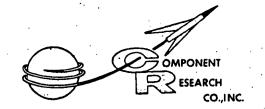


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Phone (213) 829-3615

TWX 910-343-6864

Custome	er's Name:	NASA	,,,, ,,	s/0) - 7	704-35622	SI	HEET 32	OF 188
TEST:	ation Fact	OF @ 10VU-	LAB SUPVR.	230	C.R.	C. P/NM	33421/01-11	74R	, .
אופפות	ation ract	or w roknz	ENGR.	7	cus	T. P/N			
TEST NO	· XT 1218-		Q.A.		PROD). NO. 02	237G		-
TEST TE				-	P/0	NO.	\\$8 - 32403	i	
TEST V	NI /A	•	7 ·		SPECIF	FICATION:			
SPECIAL	NOTES:							•	
	erated Ther d to Liqui				- ١	11L-C-8342	1, Para. 4.	7.9	
	to +125°C						. •		
	E LIMITS:	· · · · · · · · · · · · · · · · · · ·			EQUIP	MENT USED:		odel No.	ECN No.
		ablished %	D.F. limit	ts for	Impe	edance comp		.R. 1654	1331
this c	ondition.				Prec	ision deca		.R. 1413	1337
						citor			120
			,		Temp cham	erature te		tatham DG-l	130
			•			mometer	-	arshall	1588
								E485	e ^a
	•			•			٠	:	
	PERCENT	DISSIPATION	FACTOR WI	TH THERN	1AL S	SHOCK	(- 55°C	to +125°C)
S/N	Initial	After	After	Afte		After	After		
	D.F.	50 Cycles	150 Cycles	250 Cyc		350 Cycles	500 Cycles		
		Cycles	Cycles	Cyc		Cycles	Cycles		
001	.49	.51	.52	.51		- 51	.47		,
662	.49	.51	.51	.64		.51	.48		
003	.50	152	.52	.54		.52	.48		
004	.49	.5/	.59	.54	4	.ವ್/	.48		
66.5	154	.51	.58	.51		51	.48	,	
ove	-	.49	. 5	.5%		.5/	.48		
008		52	.78	.52	1	.66	.48	,	
000	48	40	.51	.55		.57	.46		
010	.51	51	·52	.5/		.52	.74		
	.48	.48	1	ر ر. ر. سی.		.49	.16		
011			.49				-1/2		
013		.5	.52	.57		.51	,5		
013	.49	.49	54	68		<u>.5</u>	.5/_		
014	.5	.5/	.54	.54		.52	.51		<u> </u>
015	.51	.51	.54_	.50	. 1	.51	.49		
016	.5/	.49	57	·.5/		.5	51		
TEST DATE	3-1277	3-8-111	3-1/271	2/-1/2-T	17	4-1:5-77	5-5:17		
TEST BY	(with	(X)	18:01	(20 mg)		(2,5	Se o L		



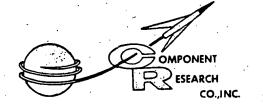
Phone (213) 829-3615

TWX 910-343-6864

GENERAL DATA SHEET

	mer's Name:	NASA	<u> </u>	s/0 - 704-	35622	S	HEET 33	OF 188
Dissi	pation Fac	tor @ 10KHz	@ - 55°C		ST P/N	83421/01-11	74 R	
	XT 1218-	5			D. NO	237G		
TEST NO.	<u> </u>					AS8-32403		
S/N	PERCENT D Initial D.F.	SSIPATION After 50 Cycles	FACTOR WITI After 150 Cycles	THERMAL S After 250 Cycles	HOCK After 350 Cycles	(-55°C t After 500 Cycles	o +125°C)	
017	. చ	.52	.54	. <i>5</i> 2	,52	52		
018	.5	.51	.53	.54	.51		·	
010	.48	.5	.51	.54	.51	.49		
020	.5	51	-54	.12	.51	.51		
021	5	.52	.52	.56	-6.4	.51		·
	,				<u>.</u>			
					· · · · · · · · · · · · · · · · · · ·			-
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EST					· -	. 1		
EST	3-1-11	3-8-77	3/10-77	4-4-77	4-15/17	5.6.17	ļ. 	

F-634-2



Phone (213) 829-3615.

TWX 910-343-6864

GENERAL DATA SHEET

Custo	mer's Name	: NASA		S/0	- 704-35622	(SHEET 34	OF 188
TEST:	, .		LAB SUPVR	37	C.R.C. P/N			
Dissi	pation Fac	tor@ 10KHz	ENGR.	2	CUST. P/N			
TEST NO	. XT 1218-	В .	Q.A.	10	PROD. NO	0237G		
TEST TE	мр. 125°C		- Sin		P/O NO	NAS8-32403	ì	
TEST V			7 .		SPECIFICATION:			
SPECIAL			•			•	-	
(Liqu	id to Liqu	rmal Shock id) 500 c (2 mins. p	ycles	5	MIL-C-8342	i, Para. 4	.7.9	
ACCEPTANO	E LIMITS:				EQUIPMENT USED:	1	Model No.	ECN No.
		ablished %	D.F. limit	s for	Impedance com		G.R. 1654	
this c	ondition.				Precision deca capacitor	ede (G.R. 1413	1337
		•		•	Temperature to		Statham	130
					chamber Thermometer		SDG-1 Marshall	1588
•					Hermometer		J E485	, , , , , , , , , , , , , , , , , , ,
					·			
	PERCENT D	ISSIPATION	FACTOR WITH	THERMA	L SHOCK	(-55°C	to +125°C)	
S/N	Initial	After	After	After	After	After		
	D.F.	50	150	250	350	500		1
· .		Cycles	Cycles	Cycle	cycles	Cycles		
001	.115	145	.145	.15.	5 .145	12		<u>'</u>
002	. 135_	.165	.185	.26	.115	.15		
003	.12_	.155	. 43	173	5 ./55	./3		
004	.125	.16	.17	-19=	i .	14		
005	.115	-15	.34	.175	145	.12		<u> </u>
006	./35	.16	.115	1213		.14		
008	.1/5	.15	.51	.17:	5 .14.5	13		
009	.105	./35	.145	.19	.14.	.115		
aic.	.12	.145	.16	.15		.175	<u> </u>	
011	://	.14	.19	.15	5 14	.12	·	
012	./35	:15	.18	17	.155	113	·	
C.13	.125	.145	.22.5	.10	145	1/3		-
014	.135	.16	.175	.18	17	.145	<u> </u>	
015	125	145	155	16	1.15	/35	1	<u> </u>
0.6	.1/5	145	175	.15	.14	12		
TEST Date	3-2-11	3-8 - ×7	3.15-77	4-21-	77 4/15/17	5-6-17	,	
TEST BY	(go w	Boar	(200	1200	45	(Wall		

F-634-1



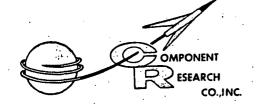
NEWS THE THE PERSON WHITE SERVICE STREET, SO WELL SERVICE SOUTH SERVICE SERVICE SERVICE SERVICE SERVICE SERVICES.

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TWX 910-343-6864

Custom	er's Name:	NASA	• • • • • • • • • • • • • • • • • • •	s/0 - 704	4-35622		SHEET 35	of 188
Dissi	pation Fact	tor @ 10KHz	@ 125°C	C.I	R.C. P/N	33421/01-11 237G	74 R	.1
TEST NO.	XT 1218-	-B				\\$8 - 32403		
	PERÇENT	DISSIPATIO	N FACTOR WI				to +125°C)	
S/N	Initial D.F.	After 50 Cycles	After 150 Cycles	After 250 Cycles	After 350 Cycles	After 500 Cycles		
017	. /3.5	.16	.195	.18	165	.15		
018	115	15	18	155	.14	.12		
019	./35	165	.215	185	.16	14	:	·
020	.125	.155	.16	.16	.15	1/35		
021	.125	-165	17	.19	./55	14		
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TEST .	3-2-11	3-6-17	3-15-17	4-4-17	4-15-11	5.6-17		
TEST BY	/ 3			(2 min)				

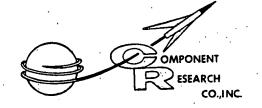


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TWX 910-343-6864

Custon	mer's Name:	NASA		/ 2= 70	4-35	622		SHEET.	36	OF 188
TEST: E.S.F	•		LAB SUPVR.		C.R	.c. P/N _ M8	3421/01-11	74 R		:::::
E.3.F	`• .	. :	ENGR. /() 1/		cus	T. P/N	•			
TEST NO	. XT-1218-B		Q.A.			D. NO0	237G	. •		
TEST .TE	MP. 25°C			7.	P/O	NO. N	4S8-32403			
	DLT. N/A		7		SPEC	FICATION:				
SPECIAL I		<u> </u>	.	•				-		
(Liqu	lerated The uid to Liqu to +125°C (id) 500 Cy	cles	6						
ACCEPTANO	E LIMITS:	•			EQUIF	PMENT USED:			ECN N	
	are no esta		S.R. limits	s for	E.S	.R. Meter	Model Clark 273		ECN N 1130	o.
this t	est condit	ion.	•••		Cab	le assembly		Hess	1130	
	• • • •		•	•		· = ==== ·)	27375			•
		•	7					-		•
•		,		•	•					
	•		•							
	E C P WI	TH THERMAL	SHUCK (-55°C to	1 + 1	25°C)				
S/N	Initial	After	After	After		After	After	T	1	
3/N	E.S.R.	50	150	250		350	500	1		
•	10 SZ	Cycles	Cycles	Cycle	es 2	Cycles	Cycles			•
001	14	.17	.16	.16	:	.16	.16			
003	.17	19	19	18		.20	.19			
003	.16	.17	19	.16	•	17	.11		•	
104	.17	.19	.18	.18		.18	18		-	
005	./5	16	.16	.15		.16	.15			
106	.17	.18	.18	.18		.19	.18			
008	./5	.17	.16	./5	-	.160	.15	,		
009	./5	17	.16	.16		.15	.1.5	ļ		
010	.16	.17	17	.17	-	.17	16	 		:
011	.14	.17	.16	16		.15	.14	<u> </u>		. <u> </u>
Ola	.15	.17	.17	.17	•	.16	.16	 		
013	.15	.16	16	.16		.16	.10.			
014	18	19	19	.19		.19	.19			
015	.16	.11	.17	17		.18	.17	<u> </u>		
0,6	./5	. 20	.16	.15		.16	.14		·	
TEST DATE	2-25-11	3-7-77	3-11-77	3.24	11	4-19-11	52.11			
TEST BY	7.8	T	(P. 92)	(3)	,	7.3	(P. 63)			
		\ <u>\~</u> '`?\		<u> </u>	<i>-</i>		- \; /			



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TWX 910-343-6864

Custom	er's Name:	NASA	s/0	- 704-356	22		SHEET 37	OF 188
E.S	.R. @ 25°C			cu	R.C. P/N	3421/01-117		
TEST NO.	XT-1218	-B	······································		ROD. NO. 023		1	
		VITH THERMA	L SHOCK		to +125°C)		·	-
S/N	Initial E.S.R.	After 50 Cycles	After 150 Cycles	After 250 Cycles	After	After 500 Cycles		
017	.18	.19	.19	.19	.20	.19.		
018	.16.	18	16	.16	.17	17	<u> </u>	
019	.16	18	.18	.17	.17	.17		
020	.16	.17	.16:	.16	118	.16	· · · · · · · · · · · · · · · · · · ·	
021	./7	.19	.18	.17	-17	17		
•					1			
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· ·					<u> </u>			ļ
	· · · · · · · · · · · · · · · · · · ·				1		:	
TEST		· ;—· · · · · · · · · · · · · · · · · ·						
DATE TEST	2-25-17	3.7.77	3-1/-77	3-24-77	4-19-71	5-2-11	<u></u>	
BY	Coc	Gro .	CAC	्रिल जुल	CAN	CARC	<u> </u>	<u></u>



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Custo	OΠ	er's	Name	: NA	SA .		S,	19CRC	70	4-35	622				SI	HEET 38	OF 188
TEST:		T4		· :		LAB	SUPVR. C	ET		C.R	.c. i	>/N	, N	18342	21/01-1	174 R	,
Seal	•		: ık Tes	t)		ENGR	. 1	V	_	4	T. F						
TEST NO					,	Q.A.			- `	1	DD.			2370	3	<u>.</u>	
TEST TE				•		-	S	4	٠,	P/0	NO.	٠			-32403		
TEST V						_	.'			SPEC	FICAT	TION	:		_		•
SPECIAL					-			,		1	:	_	00101				
					500 C	•	TP-1000 s	5		-	MIL	-C-	83421	l, Pa	ara. 4.	/•5	
-55°C		to +	125°C	(2 m	ins. p	er cy	/cle)									•	•
ACCEPTANO						-6				EQUIP	MENT	US	ED:			Model No.	ECN No.
Leak	ca	ge n	ot . to	exce	ed IXI	U a	tm/cc/:	sec.		Fi	ne 1	ea	k det	ecto	or i		651
										1						24-120B	
						<i>.</i> :		•								· ,	:
							•			1.			•		• • •		•
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										<u> </u>							
	T	Init		Af 5	ter 0 ル	Af	ter 0 ル	A	fte 250	r		۱ft 35	er 0 ⁄	-7	\fter 500 ∕		
s/N		1x10	-6.		10-6	1X1	0 ⁻⁶	1 X	10	6	1X	10	6	ĮΙΧ	10-6		
			T	Pass	Fail	Pass	Fail	Pas	s F	ail		- 1	ì		- {		,
001	Τ	. ,				6		/			j					. :	
003	ŀ	1	T -			1		1			1			4			
003	T					•											
1:04	Ť											7			·		
005	T	•	·		1				\top			7					
als	T		1.						+			1					
1.08	T				1		1	1	\top			1					
CCG	T	1							\top			寸	· · ·				
010	1				1				+			寸			1		
011	t			T	1	1		T	\top			7					
	t	\dashv			1		 		+	•		寸			1 .	<u> </u>	
013	t	+-	 	 -		 	+	\vdash	+		-	-+		-	_		
	t	+			-	 	+	\vdash	+		\dashv	\dashv			+		
014	╁	+			+	 	 	. 1	+		+	+			 	 	
015	╁	1			+		+	 -	+		- 4	\dashv			+		
06.	H				1	-	1	_	1		_			_/	<u> </u>		
DATE	6	2.28	<u>-71</u>	3.9			-71	4-6	3 - 7	7	4-	21	-11	5-6	25-11		
TEST BY			(SPC)	/		/	(Sp)	1		٠.		/.	(Pr)		<i>[</i> 2]		
	_	$-\leftarrow$	15. 1	 £	γ		~/		\leftrightarrow		<u> </u>	╳	لـــــــــــــــــــــــــــــــــــــ	-	\ 		<u> </u>



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Custom	ner's N	ame:	NASA	·.		s/0	- 704	-3562	2	·	: .	S	HEET	39	OF 188	:
Seal		T+\						CUS	T P/N	N <u>M</u> 8	<u> </u>		74 ^R			_
TEST NO.	Leak XT-1				<u>:</u>	· · ·	·. ·		D. NO	• —	0237G NAS8 <mark>-</mark> 3	2403	· •	·		
	Initi		A£t	er س	Af	er 02	Aft 25	er 0	Af	ter 50 ノノ	Aft 50	er 0 ノ				=
S/N	1x10	-6	1X10	- 6	1X10	- 6	1X10	- 6	1X1	0-6	1X1	o ⁻⁶	·			_
	Pass	Fail		_	Pass	Fail				Fail				•	·	
017			<i></i>		/	· .	/	٠.	1		1					
018	1	•		· · ·	1.		1				· /\					
019										·						
020			Á		1		V	· · · ·	₩	· ·						
021	<u> </u>		· •		<i>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</i>	<u> </u>	~		4		~				· .	
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TEST						•	/ -		,				· ·			
DATE TEST	2-28 CA		3-9	17 (8c)	3-21-	CARO	4-8-	`^-	4-21	-17_ PC	5-25 G					
ВҮ	<u>_</u>				<u></u>	ج المالي				ــــــــــــــــــــــــــــــــــــــ	تهيكها	4		<u> </u>	L	



TEST REPORT SUMMARY Thermal Shock Liquid to Liquid 500 Cycles, -55°C to +125°C

TEST NO.

Report No. XT-1218-C

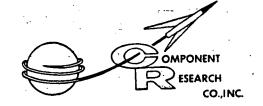
ESEARCH CO.,II	NC.			PAGE	40 OF	188
PROD. NO. 0238G	C	USTOMER NASA,	Mars	hall Spa	ce Flight	Center
LOT						
LOT SIZE 20						· · · · · · · · · · · · · · · · · · ·
C.R.C. P/N <u>M83421/01-1186R</u>	•	.R.C. S/O7	04-35	622		
DATE COMPLETED April 9	. 1977			· · · · · ·	1	
TEST		REQUIREMEN	T	MET PARAG	THOD BRAPH	ACC REJ
				•	•	20
Insulation Resistance		3.11	·,	4.7	.7	20
Capacitance		N/A		4.7	.8	0
Dissipation Factor		3.13		4.7	.9	20
E.S.R.		• ,				20 0
L.J.N.					·	19
Seal Test		3.9	· ·	4.7	.5	1
			·		· · ·	
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		-				
QUALITY CONTROL		· · · · · · · · · · · · · · · · · · ·	DAT	<u> </u>		-
	SHIPPING	DATA				. `
ORDER #	DATE SHIPPED	QTY SHIPPED	IŃVO	DICE #	QTY S	TOCKED .
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						<u></u> -
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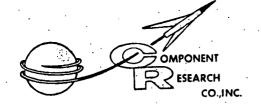
Custom	er's Name:	NASA	· · · · · · · · · · · · · · · · · · ·	s/0	- 7	04-35622	Sł	HEET 41	OF 188			
TEST:	1-41	• - •	LAB SUPVR	357	C.R	.C. P/N	33421/01-11	86 R				
	lation Res minal to To		ENGR.	1	cus	ST. P/N						
	. XT 1218-		0.4.		PRO	D. NO0		·				
TEST TE							AS8-32403	1 .	•			
TEST V		,		· · · · · · · · · · · · · · · · · · ·	SPEC	FICATION:						
SPECIAL I		mal Shock			. 1	11 L-C-83421	, Para. 4.	7.7				
		d) 500 c										
		(2 mins. p										
ACCEPTANO	E LIMITS:				EQUIF	MENT USED:		Model No.	ECN No.			
45pA n	naximum or	666,000 meg	ohms minim	um	D.C	. Micro V		G.R. 425A	1480			
		liquid to				. Test rac		CRC None	647			
1	•	no establis current @ 2		tor	D.C. volt ohm meter Simpson 260 1357 Battery pack N/A							
	iii reakage			•		, p	•,					
			`.					,				
				·								
			·			· 		•				
	INSULATI	ON RESISTAN	ICE WITH TH	ERMAL S	HOCK	(- 55.°C t	o +125°C)		···			
S/N	Initial	After	After	Afte		After	After					
	I.R.	50 Cycles	150 Cycles	250 Cycl		350 Cycles	500 Cycles					
			· · · · · · · · · · · · · · · · · · ·	Cyc.								
118	9		16	10		44	-9		·			
131	7	9	16	9	-	10	9		·			
12.2	5		15	10		17	8					
123	8	7	16	8		· · · · · · · · · · · · · · · · · · ·	8					
124	7	8	14	8		32	10					
125	7	8	16	//		20	12		 			
126	6	10	15	10		160	34		<u> </u>			
127	5	7	17	8		9	7		· · · · · · · · · · · · · · · · · · ·			
125	10	2	17.	12		GO	8					
120	8	7	15	9	•	9	7					
130	6	6	15	9	-	9	5_		-			
131	2	9	14	.8	,	7	7					
132	6	12	15	9		9	7		-			
134	7	7	1.5	8		15	6					
1.35	6	7	/5	6		13	6					
TEST	2-28-11	3.8-77	3-11-71	3-23-7	77	4-10.77	+R9.77	,				
TEST BY		(2°	201	100		Water .	(300)					



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· · · · · · · · · · · · · · · · · · ·	er's Name:	NASA	•	s/0 - 704	-35622		HEET 42	OF 188
Incul	ation Resi	stance @ 25°	, c	C.R	.C. P/N	M83421/01-1	186R	
	inal to Te			•	ST P/N			
				t	· · · · · · · · · · · · · · · · · · ·	0238G NAS8-32403	· · · · · · · · · · · · · · · · · · ·	 -
EST NO.	<u>XT 1218-C</u>		<u> </u>					
s/N	INSULATIO Initial	N RESISTANC After	E WITH THEI After	RMAL SHOCK After	(-55°C to	+125°C) After	· ·	
3/14	I.R.	50 Cycles	150 Cycles	250 Cycles	350 Cycles	500 Cycles		
136	6	15	.16	9	17	8		
/37	. 6	20	12	8	15	6		
138	1	24	/3	8	7	8		
139	7	13	14	7	13	7		
140	6	19	14	8	. 17	8		
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•						. ,		
EST	00000	3.0.11	211.11	3,02 47	100	1, 20		
TEST	wwgx/	3-8-11		UZ3-//	47/1/	77//		



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TEST:	• . • -	•	LAB SUPVR.	399		M83421/01-1		, .
	sulation Receipt to	•	ENGR.			M03421701-1	100 K	
		· · · · · · · · · · · · · · · · · · ·	ENGH.		CUST. P/N _		<u>·</u>	
TEST NO	. XT 1218-	<u>C</u>	Q.A.		PROD. NO	0238G NAS8-32403		
TEST TE		· · · · · · · · · · · · · · · · · · ·	_	<u>-</u>	P/0 NO	NASO-32403		
	DLT. 30VD	<u> </u>	<u> </u>	s	SPECIFICATION:			
(Liqui	rated Ther d to Liqui	mal Shock p d) 500 cyc (2 mins. p			MIL-C-83	421, Para. 4	.7.7	
•	E LIMITS:	· ``	<u>.</u>	-	QUIPMENT USED:			
There			mits for m	aximum	D.C. Micro I.R. Test r	V Ammeter ack	Model No. G.R. 425A CRC None	ECN No. 1480 647
		•			D.C. Volt o Temperature	hm meter Sir	npson 260 atham	1357 130
		90 g			remperature chamber	SD(1)0
	-				Thermometer	Mars	shall J +85	1588
		·			Battery pac	k N,	/A	
	INSULAT	ION RESISTA	NCE WITH TI	HERMAL S	носк (- 55°	C to +125°C)	•	
S/N	Initial	After	After	After		1		
	I.R.	50	150	250	350	500	,	
•	·	Cycles	Cycles	Cycle	s Cycle	s Cycles		
118	15	21	£5	26	30	.37		
121	13	21	10	26	61	39		
122	10	21.	/3	29	25	51		
123	//	21	10	20	24	19		
124	13	24	30	24	24			
135	11	21	10	20	25			1
126	10	21	18	40	33	52	, .	<u> </u>
127	14	18	8	18	24	15		
138	11	.20	10	20	23	20	 	
129	10	20	6	10	32	19	· ·	, , , , , , ,
130)	20	2	21	35	16	 . 	
131	10	24	6	23			 	-
132	14		9	26	18			
134	12	21	8	21	18	19		· ·
135	10	20 .	5	19	,		 	
TEST				7	30		·	
DATE TEST	2-28-17	3-8-17	3-16-77	4-51	-	1 - 7 7		
BY		(4)		/25			1 .	



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TWX 910-343-6864

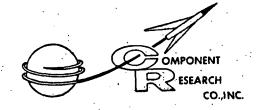
EST		· · · · · · · · · · · · · · · · · · ·		s/0 - 704-		321.03.403.33	0(2	
Ins		sistance @	-55°C		N.C. P/N	33421/01-11	86R	· · · · · · · · · · · · · · · · · · ·
(Te	rminal to	Terminal)	· .		00. NO. 02	38G		
EST NO.	XT 1218-	С			NO. NA			
		N RESISTAN	CE WITH THE	RMAL SHOCK	(- 55°C to	+125°C)	• .	,
s/N	Initial I.R.	After 50 Cycles	After 150 Cycles	After 250 Cycles	After 350 Cycles	After 500 Cycles		
136	10	20_	7	30	18	18		
131	12	19	9	19	15	11		
138	.10	19	6	12	20	17		
139	10	20	/3	17	21	17		
140	10	19	14	18	25	16		ļ
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TEST				,				
TEST	2-28-71	3-8-77	3-16-77	4-5-77	4-1577	59.77	ļ	ļ



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TWX 910-343-6864

Custo	mer's Name:	NASA			- 70	04-35622		HEET 45	OF 188
TEST:	sulation Re	sistance	LAB SUPVR	<i>\$</i> 7	C.R.	C. P/N	M83421/01	-1186 R	
	erminal to		ENGR.)	4	T. P/N			
<u> </u>	XT 1218		Q.A.		T .	D. NO	0238G		
TEST TE	10-0-					NO.	NAS8-3240	3 .1	
ŤEST V	TRUDE			•	SPECI	FICATION:		:	
SPECIAL	NOTES:				† ,	MII -C-8342	1. Para. 4	7 7	•
		rmal Shock		6 .				• / • /	
(Liqi	ula to Liqu C to +125°C	id) 500 d (2 mins. p	er cycle)						
1	E LIMITS:	<u> </u>		-	FOULD	MENT USED:		· · ·	· · · · · · · · · · · · · · · · · · ·
İ			·					Model No.	ECN No.
2250 r	A maximum	or 8,000 me	gohms mini	num			\mmeter		1480
After	there are	liquid to no establis	hed limits	rmaı for		Test rack	c meter Sin	C.R.C. Nor	1357
		current @ +				erature to			,
		•	•			amber		nam SDG-1	130
		٠				mometer ery pack	Marshal	N/A	1588
	•				Julia	ery pack		117.75	
	<u></u>					·	· · · · · · · · · · · · · · · · · · ·		
		ON RESISTAN	CE WITH TH	ERMAL S	носк		C to +125°	<u>c)</u>	
S/N	Initial	After	After	Afte		After	After		
<u> </u>	I.R.	50 Cycles	150 Cycles	250 Cyc1		350 Cycles	500 Cycles	1	
								 	· · · · · · · · · · · · · · · · · · ·
118	300	390	570	33		330	270	<u> </u>	
121	480	360	550	43		. 33is	250	 	
122	115	470	670	540	2	600	310	 	<u>.</u>
123	210	160	290	160	,	210	170	<u> </u>	
124	300	170	280	340	2	210	190		
125	280	310	.520	270	<u> </u>	250	250.	<u> </u>	
126	260	170	410	950		1700.	2.00	,	
127	260	380	610	36	0	310	320		
128	380	100	260	281	نــــــــــــــــــــــــــــــــــــــ	160	290		
129	260	350	540	290		310	310		• •
130	200	290	440	410	·.	230	240		
131	700	105	6:00	580		380	410		
133	300	200	520	400		240	230		
134	600	310	510	430		490	360	 	
135	260	190	•	161		230	250		
TEST			390	_	- 1			 	
DATE	3-1-77	3-8-77	3-17-77	4-4-	77	445-71	5/2/1	ļ	
TEST BY	3	70°8	10.5g	V. 66	<u>} </u>	(Service)	3/96/		



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Custon	mer's Name:	NASA		s/0 - 704	-35622	\$	SHEET 46	of 188
	ulation Res	istance @ l erminal)	25°C	cu:	ST P/N	M83421/01- 0238G	1186 R	
TEST NO.	XT 1218	-c		l l		NAS8-32403	1	
	INSULATIO	N RESISTANC	E WITH THE	RMAL SHOCK	(-55°C to	+125°C)		
S/N	Initial I.R.	After 50 Cycles	After 150 Cycles	After 250 Cycles	After 350 Cycles	After 500 Cycles		3
136	600	180	350	360	210	440		
137	900	3.50	590	460	310	340		
138	650	270	550	350	532)	510		
139	480	400	350	600	850	1100		
140	500	170	100	250	240	260		
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						<u> </u>	 	
TEST DATE	3-1-99	38-77	3-10-11	4-0-27	4-15.77	5.9.17		
TEST By	90	(3)	(98 A	3	m.8)	Parl		



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Custom	er's Name:	NASA	. ·	s/o	:	704-35622	5	SHEET 47	of 188
TEST:	pacitance D	rift with	LAB SUPVE	9	C.P	.c. P/N	M83421/01-	1186 R	, .
	ermal Shock		ENGR.	1/	4	ST. P/N			
TEST NO	. XT 1218-	·C .	Q.A.				0238G		·
TEST TE					P/C	NO	NAS8-32403	l	
TEST VO			7 .		SPEC	IFICATION:	•	•	
SPECIAL N	NOTES:			_	١,	11L-C-83421	Para 4	7 8	•
(Liqu	uid to Liqu	id) 500			-		, raia, 4.	,	•
- 55°0	to +125°C	(2 mins.	per cycle)						
ACCEPTANC	E LIMITS:	•			EQUI	PMENT USED:	·	Model No.	ECN No.
.135uF	to .165uF		•		1 mp	edance com	parator	G.R. 1654	1331
After	500 cycles		liquid the		Pre	cision dec	ade capacit		
	there are I		hed % capac	cītance				G.R. 1413	1387
מרודנ 	TEMILS TOP	tills test	CONGILION.					•	
						•			
·			•	•				•	•
					ļ. <i>.</i>			•	•
	PERCENT C	APAC I TANCE	CHANGE WIT	H THERM	AL S	SHOCK (-55	°C to +125	°C)	
S/N	Initial	After	After	Afte		After	After	.]	
•	Cap.	50	150	250		350	500		
	in uF	Cycles	Cycles	Cycl	es	Cycles	Cycles		
118	.150087	<i>t.</i> /	t. 125	1.27	-	1.3	T. 28		
121	.150065	1.105	+.13	1.34	<u>. </u>	1.37	7.35		
122	150591	+.095	1.095	1.80.	5	t. 83	+ E15		<u></u>
123	.148710	1.005	1.085	4.15		1.195	7.165		
124	151585	t.005	1.075	7. 125	. ح	+.175	+ 14	<u> </u>	,
125	.148622	1	T. I	1.135	7	t. 12	T.145		
126	148/31	7.1	+.085	1.47		11.25	13.15	1.	
127	.150381	t:015	1.1	4.15		+.165	t./55		
128	148977	1	1.085	+1·		+.135	T.12		
129	151465	t.01	7.085	7.06	5_	+/	1.09		ļ <u>.</u>
130	:148015	1.085	1.075	115	5	7.195	+165	ļ	-
131	.153885	7.09.5	1.00	7.19		1.33	12		
132	.149588	T.01	+.085	4.15		<i>t.16</i>	+.15		
134	150117	7.//	t.09	1.18		T. 205	t.16		<u> </u>
135	149099	+.025	1.085	4.14		7.175	+14		
TEST	2-28-11	3-7-17	3-11-77	3-28-	77	4-19-11	5-2-77		
TEST .	1000	203	200	Tr. 3		19	Trois 1		



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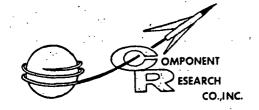
	mer's Name:	NASA	•:	s/0 - 70	04-35622		SHEET 48	OF 188
	citance Dri mal Shock	ft @ 25°C v	i th	C	C.R.C. P/N	M83421/01-1	186 R	
	XT 1218-C				PROD. NO	0238G NAS8-32403		
	PERCENT C	APACITANCE	CHANGE WIT	H THERMAL	SHOCK (-5	55°C to +125	s°C)	
S/N	Initial Cap. in uF *	After 50 Cycles	After 150 Cycles	After 250 Cycles	350	After 500 Cycles		
136	150674	t.03	1.09	+.155		+17		
137	148509	1.1	+.095	+.155	+ 185	+ 165	<u> </u>	
138	151082		t.56	+58	1.62	+.6	 	· ·
139	149832	1	t.125	1.105		,		<u> </u>
140	.149618	1.085	1.06	1.015	1065	1.045	<u> </u>	· ·
								
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					OF POOD	AGE IS		
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<u></u>		 					 	
							 	
TEST Date	2:28-11	37-71	3-4.71	3-28-7	74-10.7	5-2-47		
TEST BY		Q o'u	200			But		



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Custo	omer's Name	: NASA		s/0	- 704-35622	SI	HEET 49	OF 188
TEST:	citance Dri	ft with	LAB SUPVR	357	C.R.C. P/N	M83421/01-1	18 <i>6</i> R	
Ther	mal Shock		ENGR.		CUST. P/N			
TEST NO	. XT 1218-	С	Q.A.			0238G	· · · · · · · · · · · · · · · · · · ·	
TEST TE	FEOR			<i>.</i>		NAS8-32403		
TEST V	11.70		7		SPECIFICATION:	······································		
SPECIAL I					MIL-C-83421	Para 47	, 8	
	lerated The uid to Liqu			6	7112 0 -05-21	, raid, 4./		
	C to +125°C				•	•		
	E LIMITS:				EQUIPMENT USED:	 		
				•.*			Model No.	ECN No.
					Impedance com		G.R. 1654	1331
	capacitance condition.	e drift lin	iits for th	I·S·	Precision dec	ade	G.R. 1413	1387
	condition.				Temperature to	est chamber		
		•				Sta	tham SDG-1	130
			•	· .	Thermometer	Marsha	11 J E-485	1588
		•			,			
				·			<u> </u>	
			CHANGE WITH	H THERM	AL SHOCK (- 55°C to +1	25°C)	
S/N -	Initial	After	After	Afte	1 '	After		
	Cap. in uF	50 Cycles	150 Cycles	250 Cycl	1	500 Cycles		. *
	Till di	Cycles	Cycles	Cycli	es cycles	Cycles	_	
118	148207	- 035	015	4.113	5 t.28	+.155	<u> </u>	
121	.148167	-025	1.03	+.17	+1.3R	1.23		
122	148722	-025	+015	+.05	5 t.Rl	+. //		
123	146762	0.00	1.01	t.02.	5 +.19	1.05		
124	149622	015	1.04	-01	· 1	+.015		
125	146822		t. 03.5	-00-		t.025		· · · · · · · · · · · · · · · · · · ·
126.	146252		7/35	£32	·	÷1.3		
121	148452	+.005	1.125	7.00	T +.155	1.045	·	
128	14/122	0.60	+ /	015		7: 035		
120		To the second	 	 '''' 				
107	149502	-015	4.1	-00		-024		
13/1	149592	-015	+1	709	5 t.//	-025		
130	146142	-01	7.15 -045	-610	5 +.11 5 +.19	1.055		
131	146142	-01	1045	7.04.5	5 + 11 5 + 19 5 + 23	1.055		
131 132	146142 151962 147532	-01 -005 -015	1045	- 013 + 043 + 033	5 + 11 5 + 19 5 + 23 5 + 19	1.055		
131 132 134	.146143 151963 14753R .14821Z	-01 -005 -015 -005	7045 0.00 03	7.043 7.033 4.03	5	1.055 1.09 1.045 1.08		
131 132 134 135	146142 151962 147532	-01 -005 -015	1045	- 013 + 043 + 033	5	1.055		-
131 132 134	.146143 151963 14753R .14821Z	-01 -005 -015 -005	7045 0.00 03	7.043 7.033 4.03	5 + 11 5 + 19 5 + 23 5 + 19 + 21 5 + 15	1.055 1.09 1.045 1.08		



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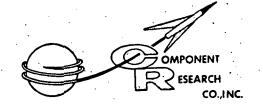
Custor	mer's Name:	NASA		s/o - 704	-35622	·	HEET 50 C	F 188
TEST	itanca Drif	+ @ _EE°c				M83421/01-1	186 R	
	itance Drif	t @ →55 C w	/Ith Inerma	1.	ST P/N			
Shock		· · · · · · · · · · · · · · · · · · ·		PR	OD. NO	0238G		
TEST NO.	XT 1218	-c	` :			NAS8-32403		
	PERCENT CA	APACITANCE	CHANGE WIT	H-THERMAL	SHOCK (-55	°C to +125°	°C)	
S/N	Initial Cap. in uF	After 50 Cycles	After 150 Cycles	After 250 Cycles	After 350 Cycles	After 500 Cycles		
1360	.148672	t. 005	t.075	7.04	1.24	t./		
137	.146632	I	t.12	+.005	7.195	106		
138	140002	-01	+.11	T055	1.145	1.025		
139		+.025	+.135	-125	7.14	1.115		
140	147582	+015	+19	-145	+.115	-005		
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75.57	·					ļ		
TEST DATE	228-77	3-8-77	3-16-77	4-4-77	4-15-77	5.5.77		
TEST BY	Q NE		(3)	1	(Brail)	(2 n =)		



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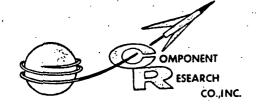
Capacitance Drift with Thermal Shock Capacitance Cap	Cust	omer's Name	: NASA	·	~ (S\0	- 704-35	622	Sł	HEET 51	of 188
Thermal Shock TEST NO. XT 1218-C TEST YOUT. N/A SPECIAL NOTES: Accelerated Thermal Shock per TP-1006 (Liquid to Liquid) 500 cycles -55°C to +125°C (2 mins. per cycle) Acceptance Lustis: There are no established initial capacitance and % capacitance drift limits for this test precision decade G.R. 1654 1331 SNN Initial After Cap. 50 150 250 350 500 In uF Cycles Cycles Cycles Cycles Cycles 18	TEST:	acitance Dr	ift with	LAB SUPVR.	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	C.R.C. P/	'N	M83421/01-1	186 R	
PROD. NO. 02386 PROD. NO. 02386 PROD. NO. NASS-32403 PROD				ENGR.	1	1		· · · · · · · · · · · · · · · · · · ·		
TEST TEMP. 125°C TEST VOLT. N/A SPECIAL MOTES! Accelerated Thermal Shock per TP-1006 (Liquid to Liquid) 500 cycles -55°C to +125°C (2 mins. per cycle) ACCEPTANCE LIMITS: There are no established initial capacitance and % capacitance drift limits for this test condition. There are no established initial capacitance and % capacitance drift limits for this test condition. There are no established initial capacitance and % capacitance drift limits for this test condition. There are no established initial capacitance and % capacitance drift limits for this test condition. There are no established initial capacitance and % capacitance drift limits for this test condition. There are no established initial capacitance and % capacitance drift limits for this test precision decade G.R. 1413 1387 capacitor Temperature test chamber Statham 130 SDG-1 Thermometer Marshall J E-485 1588 Therefore a fitter after after after After (cap. 500 150 250 350 500 condition) Thermometer Marshall J E-485 1588 Therefore a fitter after after after after after after (cap. 500 150 250 350 500 condition) Thermometer Marshall J E-485 1588 Therefore a fitter after a	TEST NO	. XT 1218-C		04/201	· /			0238G		
### PERCENT CAPACITANCE CHANGE WITH THERMAL SHOCK (-55°C to +125°C) Percent Capacitance drift limits for this test condition. Precision decade	<u> </u>	1000	•			i i	_	NAS8-32403	į.	
Accelerated Thermal Shock per TP-1006 Cliquid to Liquid 500 cycles -55°C to +125°C (2 mins. per cycle) Acceptance Limits: Equipment used: MIL-C-83421, Para. 4.7.8		11.75					N:			
Cliquid to Liquid 500 cycles -55°C to +125°C (2 mins. per cycle)				<u>. </u>			0515			
-55°C to +125°C (2 mins. per cycle) ACCEPTANCE LIMITS: There are no established initial capacitance and % capacitance drift limits for this test condition. PERCENT CAPACITANCE CHANGE WITH THERMAL SHOCK (-55°C to +125°C) Initial After Cap. 50 150 250 350 500 In uf Cycles Cycles Cycles Cycles Cycles Cycles Cycles IN INSTABLE LIMITS: PROCENT CAPACITANCE CHANGE WITH THERMAL SHOCK (-55°C to +125°C) In uf Cycles	Acce	lerated The	rmal Shock		6	_MIL-C	-83421	, Para. 4.	7.8	•
Percent capacitance change with thermal shock (-55°C to +125°C) Interior Capacitance						·			•	
Percent capacitance drift limits for this test capacitance and % capacitance drift limits for this test capacitance draft limits for this draft limits for this test capacit	i		(Z mins.	per cycle)		,		·	···	
Percent capacitance drift limits for this test capacitor Temperature test chamber Statham 130 spg-1 Thermometer Marshall JE-485 1588	ACCEPTAN	CE LIMITS:		•	•	EQUIPMENT	JSED:		Model No.	ECN No.
Capacitor Temperature test chamber Statham SDG-1 Thermometer Marshall JE-485 1588										
Temperature test chamber Statham 130 SDG-1 Thermometer Marshall J E-485. 1588 PERCENT CAPACITANCE CHANGE WITH THERMAL SHOCK (-55°C to +125°C) Initial After After After After After After Cap. 50 150 250 350 500 In uF Cycles Cycles Cycles Cycles Cycles Cycles I/B 150446 + 0.35 - 0.4 + 1.65 + 1.55			e drift lin	nits for th	is test			ade	G.R. 1413	138/
Percent capacitance Change With Thermal Shock (-55°C to +125°C) S/N	Conal	LIOII.	*		• • •			est chamber	Statham	130
PERCENT CAPACITANCE CHANGE WITH THERMAL SHOCK (-55°C to +125°C) Initial After After After After After After Cap. 50 150 250 350 500 In uf Cycles Cycles Cycles Cycles Cycles 1/8 /30446 +035 -04 +.165 +.155 F. 155 //// //// //// //// //// //// ////	.	·				,			SDG-1	-
S/N Initial After 150 250 350 500 in uF Cycles Cycles Cycles Cycles Cycles 1/8 1/50446 1/505 -04 1/65 1/55 1/55 1/2 1/50506 1/25 -085 1/25 1/25 1/25 1/3 1/50866 1/25 -085 1/25 1/25 1/25 1/4 1/50866 1/25 -085 1/25 1/25 1/4 1/50866 1/25 -085 1/25 1/25 1/4 1/4 1/25 1/25 1/4 1/4 1/25 1/25 1/4 1/4 1/25 1/25 1/4 1/4 1/25 1/25 1/4 1/4 1/25 1/25 1/4 1/4 1/25 1/4 1/4 1/25 1/4 1/4 1/25 1/4 1/4 1/25 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4				,		Thermome	eter	Marsha	11 J E-485.	1588
S/N Initial After 150 250 350 500 in uF Cycles Cycles Cycles Cycles Cycles 1/8 1/50446 1/505 -04 1/65 1/55 1/55 1/2 1/50506 1/25 -085 1/25 1/25 1/25 1/3 1/50866 1/25 -085 1/25 1/25 1/25 1/4 1/50866 1/25 -085 1/25 1/25 1/4 1/50866 1/25 -085 1/25 1/25 1/4 1/4 1/25 1/25 1/4 1/4 1/25 1/25 1/4 1/4 1/25 1/25 1/4 1/4 1/25 1/25 1/4 1/4 1/25 1/25 1/4 1/4 1/25 1/4 1/4 1/25 1/4 1/4 1/25 1/4 1/4 1/25 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4					•					. •
S/N Initial After 150 250 350 500 in uF Cycles Cycles Cycles Cycles Cycles 1/8 1/50446 1/505 -04 1/65 1/55 1/55 1/2 1/50506 1/25 -085 1/25 1/25 1/25 1/3 1/50866 1/25 -085 1/25 1/25 1/25 1/4 1/50866 1/25 -085 1/25 1/25 1/4 1/50866 1/25 -085 1/25 1/25 1/4 1/4 1/25 1/25 1/4 1/4 1/25 1/25 1/4 1/4 1/25 1/25 1/4 1/4 1/25 1/25 1/4 1/4 1/25 1/25 1/4 1/4 1/25 1/4 1/4 1/25 1/4 1/4 1/25 1/4 1/4 1/25 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4									·	
S/N Initial After 150 250 350 500 in uF Cycles Cycles Cycles Cycles Cycles 1/8 1/50446 1/505 -04 1/65 1/55 1/55 1/2 1/50506 1/25 -085 1/25 1/25 1/25 1/3 1/50866 1/25 -085 1/25 1/25 1/25 1/4 1/50866 1/25 -085 1/25 1/25 1/4 1/50866 1/25 -085 1/25 1/25 1/4 1/4 1/25 1/25 1/4 1/4 1/25 1/25 1/4 1/4 1/25 1/25 1/4 1/4 1/25 1/25 1/4 1/4 1/25 1/25 1/4 1/4 1/25 1/4 1/4 1/25 1/4 1/4 1/25 1/4 1/4 1/25 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4 1/4		PERCENT C	APACITANCE	CHANGE WIT	H THERM	AI SHOCK	(-55	°C to +125°	°C)	
Cap. 50 150 250 350 500 Cycles C	S/N	Initiai								
118 150446 +035 -04 +.165 +.155 +.155 121 150506 +035 -085 +.805 +.19 +.185 123 150866 +025 -085 +.185 +.105 +.105 123 1490310 +015 -045 +.095 +.09 124 151856 +013 -04 +.09 +.09 125 148946 +015 -01 +01 +01 +01 +015 126 148316 1.01 -025 +.13 +1.4 +2.4 127 150116 +03 -05 +.05 +.05 128 14902 +035 +01 +05 +.05 +.05 129 151612 +.025 +01 +045 +.055 +01 130 148312 +02 -035 +.125 +.125 131 154042 +015 +.055 +.125 +.125 132 149682 +015 +.095 +.095 +.095 134 150452 +.01505 +.1 +.1 +.105 135 149512 +.0151 +.065 +.065		1						, -	·	
121 150506 + 035 -085 + 805 + 19 + 185 123 150866 + 025 -005 + 125 + 105 + 105 123 149036 + 015 -045 + 095 + 09 + 09 124 151856 + 013 -04 + 07 + 07 + 075 125 148946 + 015 -01 + 07 + 07 + 075 126 1483/16 101 -025 + 13 + 1.4 + 2.4 127 150/16 103 -05 + 095 + 055 + 055 128 149202 + 015 000 + 05 + 055 + 055 129 1516/2 + 025 + 01 + 045 + 055 + 01 130 1482/2 + 02 + 035 + 105 + 105 + 105 131 154042 + 015 + 055 + 125 + 125 132 149682 + 015 + 055 + 095 134 150452 + 015 -05 + 11 + 1 + 105 155 149512 + 015 -11 + 065 + 065		In uf	Cycles	Cycles	Cycl	es Cy	cles	Cycles	1	
121 150506 + 035 -085 + 805 + 19 + 185 123 150866 + 025 -005 + 125 + 105 + 105 123 149036 + 015 -045 + 095 + 09 + 09 124 151856 + 013 -04 + 07 + 07 + 075 125 148946 + 015 -01 + 07 + 07 + 075 126 1483/16 101 -025 + 13 + 1.4 + 2.4 127 150/16 103 -05 + 095 + 055 + 055 128 149202 + 015 000 + 05 + 055 + 055 129 1516/2 + 025 + 01 + 045 + 055 + 01 130 1482/2 + 02 + 035 + 105 + 105 + 105 131 154042 + 015 + 055 + 125 + 125 132 149682 + 015 + 055 + 095 134 150452 + 015 -05 + 11 + 1 + 105 155 149512 + 015 -11 + 065 + 065	118	150446	+035	-04	+.16	5 1.	155	r. 155		
123 150866 1.025 -005 1.125 1.105 1.105 123 149036 1.015 -045 1.095 1.09 124 151856 1.015 -04 1.07 1.075 125 148946 1.015 -01 1.07 1.075 126 148316 1.01 -025 1.13 1.14 1.24 127 150716 1.03 -05 1.095 1.095 1.055 128 149202 1.015 0.00 1.05 1.055 1.065 129 1.51672 1.025 1.01 1.045 1.05 1.05 130 148292 1.03 -035 1.105 1.105 1.105 131 1.54042 1.015 1.055 1.05 1.05 1.05 132 149682 1.015 1.055 1.05 1.05 134 1.50452 1.01 -0.5 1.1 1.1 1.105 155 149512 1.015 -11 1.065 1.065 1.065					t. 20					
123 149036 +015 -045 +095 +09 +09 124 151856 +015 -04 +07 +07 +075 125 148946 +015 -01 +07 +07 +075 126 148316 1.01 -025 +13 +1.4 +2.4 127 15016 +03 -05 +095 +055 +055 128 14902 +025 0.00 +05 +055 +065 129 151672 +025 +01 +045 +055 +01 130 148272 +02 -035 +125 +125 131 154042 +015 +055 +125 +125 132 149682 +015 +055 +095 +095 134 150452 +01 -05 +1 +1 +105 155 149512 +015 -11 +065 +065		.150866		1 '	,		/			
124 .151856 +013 -04 +.07 +.07 +.075 125 .148946 +015 -01 +07 +07 +075 126 .148316 +.01 -025 +.13 +1.4 +2.4 127 .150116 +.03 -05 +.095 +.095 +.065 128 .149202 +.025 +.01 +.045 +.055 +.01 129 .151672 +.025 +.01 +.045 +.055 +.01 130 .148272 +.02035 +.105 +.105 +.11 131 .154042 +.015 +.055 +.125 1.12 +.125 132 .149682 +.015 +.095 +.095 +.095 134 .150452 +.0105 +.1 +.1 +.105 135 .149512 +.01511 +.065 +.065	123	149036	+015		t.000	5 7.0	a.	1.09	·	
125 148946 + 015 -01 +01 +01 +01 +015 126 148316 +01 -025 +13 +1.4 +2.4 127 150716 +03 -05 +095 +095 +055 128 149202 +015 0.00 +05 +055 +065 129 151612 +025 +01 +045 +055 +01 130 148212 +02 -035 +105 +105 +105 131 154042 +015 +055 +125 +125 132 149682 +015 +095 +095 +095 134 150452 +01 -05 +1 +1 +105 135 149512 +015 -11 +065 +065 TEST TEST TEST TOTAL	1				/_	· [/			
126 148316 1.01 -035 1.73 11.4 12.4 127 150716 1.03 -05 1.095 1.095 1.05 128 149202 1.015 0.00 1.05 1.055 1.065 129 1.51672 1.025 1.01 1.045 1.055 1.07 130 148272 1.02 1.035 1.105 1.105 1.105 131 1.54042 1.015 1.055 1.125 1.125 132 149682 1.015 1.095 1.095 1.095 134 150452 1.01 -0.5 1.1 1.1 1.105 135 149512 1.015 -11 1.065 1.065 1.065		1			1 / .		•	i '		
127 150716 1.03 -05 1.095 1.095 1.065 128 149202 1.015 0.00 1.05 1.065 129 1.51672 1.025 1.01 1.045 1.055 1.07 130 148272 1.02 1.035 1.105 1.105 1.11 131 1.51042 1.015 1.055 1.125 1.125 132 149682 1.015 1.095 1.095 1.095 134 150452 1.01 -0.5 1.1 1.1 1.105 135 149512 1.015 -11 1.065 1.065 1.065				i			7,		,	
128 149203 7.015 0.00 7.05 7.055 7.065 129 151672 7.025 7.01 7.045 7.055 7.07 130 148272 7.03 7.035 7.105 7.105 7.10 131 154042 7.015 7.055 7.12 7.125 132 149682 7.015 7.055 7.095 7.095 134 150452 7.015 7.05 7.1 7.1 7.105 135 149512 7.015 7.11 7.065 7.065 7.065	l '				. ,	I .				
129 .151672 +.025	/	7			1 /					
130 148372 103 -035 +.105 +.105 +.11 131 154042 +.015 +.055 +.135 1.12 +.125 132 149683 +.015 +.095 +.095 +.095 +.095 134 150452 +.0105 +.1 +.1 +.105 135 149512 +.01511 +.065 +.065 +.065 TEST DATE 3-1-77 3-8-71 3-10-77 4-4-17 4-15-77 5-9-19	129	7		l		•		1		
131 154042 +015 +055 +125 +125 +125 132 149683 +015 +095 +095 +095 +095 134 150452 +01 -05 +1 +1 +105 135 149512 +015 -11 +065 +065 +065 TEST DATE 3-1-77 3-8-77 3-10-77 4-4-77 4-15-77 5-9-19	130	148272						±.//		
132 .149683 +015 +095 +095 +095 +095 134 .150452 +01 -05 +.1 +.1 +.105 135 149512 +015 -11 +065 +065 +065 TEST DATE 3-1-77 3-8-71 3-10-77 4-4-17 4-15-77 5-9-19			i		I .			+.125		
134 150452 +01 -05 +1 +1 +105 135 140512 +015 -11 +065 +065 +065 TEST DATE 3-1-77 3-8-71 3-10-77 4-4-77 4-15-77 5-9-19	132	149682	1.015	1	E .	I	25	T '		
135 149512 +015 -11 +065 +065 +065 TEST DATE 3-1-77 3-8-77 3-10-77 4-4-77 4-15-77 5-9-19	l	150452	I	,	4.1	+./	,	, ,		
DATE 13-1-77 13-8-77 13-10-77 14-4-77 14-15-77 15-9-79 1		149512	t:015	•	1.06	5 1.0	65	1		
TEST TOST TOST TOST TOST		3-1-77	3-8-77	3.10-77	4-4-7	7 4-1	5-77	5-9.19		
or \<\'\' \	TEST BY	200	200	Took	1203	7		708		



Phone (213) 829-3615

TWX 910-343-6864

Custor	mer's Name:	NASA	•	s/0 - 704	-35622	• • • • • • • • • • • • • • • • • • • •	SHEET <u>52</u>	OF 188
Cap Sho	acitance Dr ck	ift @ 125°(with Ther	cu	R.C. P/NM		186 R	
TEST NO.	XT 1218-C					238G AS8-32403	1:	····
			CHANGE WI		SHOCK (-5	5°C to +12	5°C)	
s/N	Initial Cap. in uF	After 50 Cycles	After 150 Cycles	After 250 Cycles	After 350 Cycles	After 500 Cycles		
136.	150952	+015	÷02	1.085	1.085	1.095		
137	148812		08	1.09	1.075	+.075		
138	152142	t.025	-055	1.07	1.06	1.065	·	
139	150282	1.025	-055	1.075	+.07	t.085		
140	.149782	T.01	+.03	1.035	+.03	1.04		
(ne 6)								
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			<u> </u>					
DATE	3-1-71	3-8-11	3-10-11	3.23-77	4-15-77	59.11	ļ	
TEST BY	50.3	TORRE	To Go	F 3	17-81			



Phone (213) 829-3615

TWX 910-343-6864

Cust	omer's Name	: NASA		/0XV -	704-35622	S	HEET 53 .	OF 188
TEST:	ssipation F	actor @	LAB SUPVR.	VI 1	C.R.C. P/N	M83421/01-		
· P	KHZ		ENGR.	1	CUST. P/N	· .		
TEST NO	XT 1218-C		Q.A.		•	0238G		
TEST TE		·		11		NAS8-32403		
TEST V			1		PECIFICATION:			
SPECIAL								
Acce	•	ermal Shock	per TP-100 cycles	6	MIL-C-83421	, Para. 4.	7.9	
		(2 mins.	per cycle)					
	E LIMITS:				QUIPMENT USED:		<u> </u>	
				.			Model No.	ECN No.
15%	5001	1.1	1:		Impedance comp		G.R. 1654	1331
		liquid to no establis			Precision deca	ade	G.R. 1413	1387
	nis test co.		116u /0 U.F.		capacitor			
			•					
					· · · · · · · · · · · · · · · · · · ·			· •
	•		•					•
ĺ	•		• .					·
	PERCENT D	ISSIPATION	FACTOR WIT	H THERMA	L SHOCK (-55	°C to +125	°C)	· · · · · · · · · · · · · · · · · · ·
S/N	Initial	After	After	After	After	After		
	D.F.	50	150	250	350	500		
		Cycles	Cycles	Cycle	s Cycles	Cycles		
118	:01	.075	.085	.08	08	.08		
121	.085	.00	.09	.09	. 095	.09		
122	.01	.085	.085	.09	.08	.08		
123	.07	.015	.085	08:	5 .085	.085		
124	.07	.075	.075	.085		.08		
125	.07	07.5	.09	.08	.08	085		
126	.07	.08	.085	.095	1.145	.19		
127	.07	.075	.085	.08	.085	08	<u> </u>	
128	.07	.075	.085	.015	.08	.08	ļ <u></u>	
129	.07	075	.085	.075	1.08	.08	,	
130	:07		.085	.075	08	.105		
1.31	.07	.095	085	.08	.08	.08		
132	.07	.075	.085	.08		.08		
1.34	.07	-08	.085	.07	.08	.08		
135	075	.075	.08	.075	5 .075	.08		
TEST DATE	2.28.11	3-7-27	3-11-72	3-26-2	11/6-	5-2-77		
TEST BY		(10 mg	(200)	120-1	Tong:	77.08		
<u> </u>	79.5		1460		<u>_\</u>		ــــــــــــــــــــــــــــــــــــــ	<u> </u>



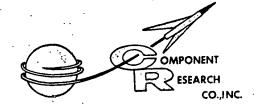
Phone (213) 829-3615

TWX 910-343-6864

GENERAL DATA SHEET

	mer's Name	: NASA	·	s/0 - 70 ^L	-35622		HEET 54	OF 188		
Dis:	sipation Fa	ector @ IKH	z @ 25°C	CU	R.C. P/N ST P/N OD. NO. (186R			
EST NO.	XT 1218-0					IAS8-32403	1			
·	PERCENT	DISSIPATION	N FACTOR WI	WITH THERMAL SHOCK (055°C to +125°C)						
S/N	Initial D.F.	After 50 Cycles	After 150 Cycles	After 250 Cycles	After 350 Cycles	After 500 Cycles				
136	.07	08	.085	.085	.08	.085				
137	.07	.075	.085	.075	.075	.075				
138	.07	.065	.08	.075	.08	.075	ļ.			
139	.075	.075	.08	.075	1075	.08		• • •		
140	.075	.08	.08.5	075	.08	.075				
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PATE	2-28-17	3-7-77	3-14.17	3-28-77	4-19-77	5.2.77				
TEST BY	\triangle		16.5		1 65	1]	1		

F-634-2



Phone (213) 829-3615

TWX 910-343-6864

Cust	omer's Name	: NASA.		1800	- :	704-35622	·Sh	IEET 55	OF 188
TEST:		• •	LAB SUPVR.			I.C. P/N			
DIS	sipation Fa	ctor @ IKHZ	ENGR.	1/	4	ST. P/N			
TEST NO	XT 1218-	С .	Q.A.	1		DD. NO			
	EMP55°C			<u> </u>		NO		t .	
TEST V			7	·	SPEC	IFICATION:			
SPECIAL	NOTES:		<u> </u>		١,	11L-C-83421	Para 4 7		
	lerated The			6	1	116-6-05-21	, raid. 1 ./	• 9	
	uid to Liqu C to +125°C				1			•	
	CE LIMITS:	· · · · · · · · · · · · · · · · · · ·		·	FOUL	PMENT USED:			· ·
			•					odel No.	ECN No.
	are no est		D.F. limit	s for		edance com		.R. 1654	
this	test condit	ı on ·		٠		ecision deca pacitor	ade G	.R. 1413	1387
						perature to	est chamber		
				·		•	S	tatham SDG-	-
			. •		The	ermometer		shall J -485	1588
	•		•					-405	
	1						 		
						SHOCK (-5		°c)	
S/N	Initial D.F.	After 50	After 150	Afte 250		After 350	After 500	1	
		Cycles	Cycles	Cycl		Cycles	Cycles		
110	,,	i a m		20	·	2/	20		
113	.36	.37	.39	-37		360	.37		
121	.37	36	4	.39		.37	<u>・38</u> マク		
122	.36	36		.37		38	·37 36		· · · · · · · · · · · · · · · · · · ·
123	3/	.36	44	. <i>ਤੱਣ</i> 		.36	. <u>3</u> න		·
124	·35	36	-38	-37		.36	.37		
15.5	36	.3/12	.44	·38		.4	.38	·	•
126	.35	.36	.49	5/			.56		
127	.36	36	.39	.38		36,	·30·		
138	1.40	.36	- 4-	-37	•	.36	-37	00:	
129	36	.36	.39	1.39	· ·	.36	37	OF SINAL	Pan
130	.48	·35	37	.3.	<u>,</u>	.3/12	.36	POOR	PAGE IS
131	36	37	76	. 44		.3ls.	-37	OF POOR	- TALITY
132	.37	.3.6	4	.39		.36	37		
134	.37	36	.42	.41		.310	·37		
<u>/3ブ</u>	36	· 310	.44	.36		.3.12	·37		·
DATE	2-26-77	3-8-17	3-16-77	4-5-7	7	4-15-77	5-9-11		
TEST BY	133				•				•



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TWX 910-343-6864

GENERAL DATA SHEET

Custon	ner's Name:	NASA		s/0 - 704	-35622		SHEET 56	OF 188
Diss	•	ctor @ 1KHz	@ - 55°C	C.F CU PR	R.C. P/N ST P/N OD. NO. 0	83421/01-1		
	PERCENT	DISSIPATION	FACTOR WI			5°C to +12	25°C)	
s/N	Initial D.F.	After 50 Cycles	After 150 Cycles	After 250 Cycles	After 350 Cycles	After 500		
136	.37	36	.39	.38	.37	.38		
137	.35	. 36	.37	.37	36	36		
138	.37	.36	.4	.38	136	-37		
139	.42	.41	.44	.44	.4,	.44	<u> </u>	
140	.37	.39	.39	•ও৪	360	.37	<u> </u>	
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···-·					<u> </u>			
DATE	2-28-11	38-77	3-18-77	4-4-77	4-15.77	5-9-17	<u> </u>	
TEST BY	10.5	(Bank)	(de la		(Ve a to		· <u> </u>	

F-634-2

ANNO MANDES SERVICES DE L'OLD DE L'ALTERNATION DE L'ALTER



ORIGINAL PAGE IS OF POOR QUALITY

1655 - 26th Street · Santa Monica, California 90404

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TWX 910-343-6864

Custom	er's Name:	NASA		s/0 _{/cs} 70	04-3	5622	SI	HEET 57	OF 18	18
TEST:	•		LAB SUPVR.	Z#1	C.R	.C. P/NM	83421/01-11	86R		
Dissi	pation Fac	tor @ IKHz	ENGR.	12/	4	ST. P/N				
TEST NO	XT-1218-	c	0.4.	***	PRO	D. NO0	238G	· · · · · · · · · · · · · · · · · · ·		
TEST TE	мр. 125°C			,,,,	P/C	NON	458-32403	<u> </u>		
TEST VO	N/A.		1		SPEC	IFICATION:				
SPECIAL N	IOTES:				1	•		·		
		ermal Shock		06	-	MIL-C-8342	1, Para. 4.	7.9		
		uid) 500 c	•			•				
	E LIMITS:	C (2 mins.	per cycle)		FOUL	PMENT USED:		<u>.</u>		
	•				1			odel No.	ECN No.	
	est condit	ablished %	D.F. limits	sitor		edance comp cision dec		.R. 1654 .R. 1413	1331 1387	•
ints c	est condit	1011.	•	·		acitor	ade . G	Na ITIO	1507	٠
	. ′		•		Tem	perature to			130	
	• •					mber		m SDG-1	1500	
					ine	rmometer	Marshall	J E-485	1588	
		• • •				•			·	
	PERCENT	DISSIPATION	FACTOR WIT	TH THERM	<u>Ι</u> ΜΔΙ	SHUCK ("ו	55°C to +12	E°C)		
S/N	Initial	After	After	Afte		After	After) () 	'	
3/14	D.F.	50	150	250		350	500		, <u> </u> .	
	υ, Γ.	Cycles	Cycles	Cycl	les	Cycles	Cycles			
113	.04	.045	.065	.03	5	.04	-035			
121	.04	.045	.09	.04	5	.05	1035			
122	.024	.035	<u>. 08</u>	103.	5	.04	.035			
123	.04.	-03	.09	104	•	.015	.035			
124	.04	-03.5	065	قص		-04	035			
125	.04	.04	.୦୫.୪	.04	-	.04	. <i>03</i> 5			
126	.03	.035	.08	.04:		.06	.015			
1-27	.04	.045	.09	.04		.045	.035			
128	04.	-035	.085	03.		.04	.035			
129	.05	.04	.085	.04		.04	.035			
130	./3	.035	.085	.03		.035	. 035			-
131	.04	.06	-085	.04		.04-5	.035		-,	
132	.04	.035	.085	.03			.03			
134	.04	.04	.065	.03		.04	.035			
135	.04	.035	.06	.03		.035	.03			
TEST	3-1-77		3-10-77	4-4-	77	4-15-77	5-9-77			
TEST BY		i		1-0	-		_ ′			
	Tog	To Far	17/2	1-12n/21		- 	7.8	·	<u> </u>	



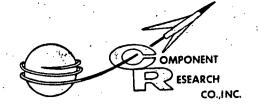
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TWX 910-343-6864

GENERAL DATA SHEET

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Custom	er's Name:	NASA	s/0	0 - 704-356	522	OF POO	R QUALITY HEET 58	of 188
TEST		tor @ 1KHz (@ +125°C	cus	I.C. P/N <u>M8</u> ST P/N DD. NO, 02			
TEST NO.	XT-1218-	C				s8 - 32403	\	
	PERCENT I	DISSIPATION	FACTOR WIT	TH THERMAL	SHOCK (-	55°C to +12	5°C)	· ,
S/N	Initial. D.F.	After 50 Cycles	After 150 Cycles	After 250 Cycles	After 350 Cycles	After 500 Cycles		,
13/2	.04	.045	.085	.04	.045	.035		
137	.04	.035	-08	.035	.035	.03		
138	.04	.04	.005	.04	.04	.035		
130	.04	.04	.085	.04	.04	035		
140	.04	.07	085	.04	.045	.035		
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TEST Date	3-1-77	3-6-77	310-77	3-23-11	4-1-5-77	59.17		
TEST	L-01				I	1		1



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TWX 910-343-6864

<u> </u>	omer's Name	: NASA		77/17	J4-5	5622		SHEET 59	OF 188
TEST:			LAB SUPVR	<i>₹1</i>	C.R	.c. p/n <u>M8</u>			1 .
i Dissi	pation Fac	tor @ 10KHz	ENGR.	1/	ł ·	T. P/N			
TEST NO	XT-1218-C	·	Q.A.	5.5		D. NO. 02	38G		
TEST TE	0=0-						s8 - 32403	1	
TEST V		<u></u>	1		<u> </u>	FICATION:			
SPECIAL	NOTES:		•	·	1	•		•	
		mal Shock pe			-	MIL-C-834	21, Para.	4.7.9	
		d) 500 cyc (2 mins. pe							
		(=	,			MANA VÁSA	· .		
	E LIMITS:		•			PMENT USED:		Model No.	ECN No.
		ablished %	D.F. limit	s for		edance com	•	G.R. 1654	1331
this 1	test condit	ion.				cision dec acitor	ade	G.R. 1413	1387
		• • •			Cap	acitor		•	
-	*								•
							· •		
		•				,			•
					<u> </u>		· · · · · · · · · · · · · · · · · · ·		<u>; </u>
	PERCENT D	ISSIPATION I	ACTOR WITH	THERM	AL S	HOCK @ 10	KHz (-55°	C to +125°C	:)
S/Ň	Initial	After	After	After		After	After		
	D.F.	50	150	250		350	500	,	
		Cycles	Cycles	Cycle	es	Cycles	Cycles		·
118	17	165	.18	.17:	5	.185	.18	· ·	
121	.19	.24	.25	.23		23	.22		
122	.14	.165	165	.16		.17	.165		
123	.17	.195	.215	.22	2	.225	.225	,	
124	.15	.165	.19	.18		.2	.19		
125	.165	.185	.215	.19		.2	205		
126	.145	165	117	160		./8	.195		
121	.17	.175	ئے.	.19		,205	12		
128	.155	.17	.19	.18		195	1205		
129	.15	.165	.185	117		.18	./8		
130	.16	.18	.19	:19		,20	.19		
131	.165	.195	<u>.ź</u>	18:	<u>5</u>	.30	.205		
132	.16	17	.185	17:	5	16	185		
134	.155	.175	.185	.16		19	.18		
135	.18	./55	165	.16	5	.17	.17		
TEST DATE	2-28-11	37-77	3-//-17	3-28.	ラフ	4-19-77	.5.2-77		
TEST BY	7,00			_	-,-	7		1	
ا در :	1-705)	1703	TOS	12.00		3-3	7.2		



Phone (213) 829-3615

TWX 910-343-6864

TEST	mer's Name			0 - 704-356		3421/01-118	HEET 60 6R	OF 100
Diss	ipation Fa	ctor @ 10 K	Hz @ 25°C		ST P/N	<u> </u>		
·						238G		
TEST NO.	XT-1218-C		• :	· I		AS8-32403	ì	
	PERCENT	DISSIPATIO	N FACTOR W	TH THERMAL	SHOCK @ 1	0 KHz (-5	5°C to +12	5°C)
S/N	Initial	After	After	After	After	After		
	D.F.	50 Cycles	150	250	350	500	,	
121	1.1.		Cycles	Cycles	Cycles	Cycles	<u>·</u>	
136	.145	.205	.22	.22	.22	225	_ 	
<u> </u>	.15	165	.175	.165	.17	.18		
138	./5	15	175	-17	.18	175		
139	./55	.175	.185	.185	19	.195		
140_	./7	155	12	.195	E_	.21		
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		<u> </u>					, 	
TEST	00011		2 44		/			
DATE	2-28-11	3-7-71	13-11-77	3-26-71	4-19-17	15 <i>% 77</i>		<u> </u>

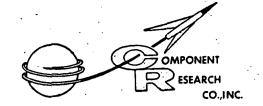


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Custo	mer's Name:	NASA		/cs/0 -	- 704	- 35622	S	HEET 61	OF 188
TEST:			LAB SUPVR.	Ø	T -		183421/01-1		
DISSI	pation Fact	or @ TUKHZ	ENGR.	1/	4	T. P/N			
TEST NO	XT 1218	3-c	0.A.	16.	PRO		238G		
TEST TE					P/0	NON	AS8-32403	i i	·
TEST V		\	<u> </u>		SPECI	FICATION:			,
SPECIAL	•] ,	(11 _r_82 <i>li</i> 21	, Para. 4.	7.0	•
	erated Ther id to Liqui				-'	11 6-03421	, raid. 4.	/•9 ,	
	to +125°C			•	İ			•	
E .	E LIMITS:			- · · · ·	EQUIF	MENT USED:	<u>.</u>	Madal Na	ECN No
There	are no esta	ablished %	D.F. limits	s for	l mo	edance com		Model No. G.R. 1654	ECN No. 1331
	est condit		,		Pre	cision dec		G.R. 1413	1387
		•	•			acitor	-		
			• .			perature to mber		am SDG-1	130
Ì		,			The	rmometer	Marsha	11 J E-485	1588
	•			•		,		,	
	·		·		<u> </u>	<u> </u>			
	PERCENT D	ISSIPATION	FACTOR WIT	H THERM	AL S	HOCK @ 10	KHz (-55	°C to +125°	c)
S/N	Initial	After	After	Afte	r	After	After		
	D.F.	50 Cycles	150	250		350	500		•
			Cycles	Cycl		Cycles	Cycles		<u></u>
118	.52	.6	.74	.59		,55 -	51		
121	.58	.59	.8	.63		63	.56		
122	5/	.54	.76	.58		.65	.5/		
123	.58	చ8	·8/	.6		62	.55	·	
124	-53	-56	_చ8	.56	1	<u>55</u>	. 53		
125	.54	.56	.86	.59		.58	. 53	<u> </u>	
126	.50	.54	.84-	71		6.4	63	 	
127	54	. 56	.62	.6		<u>, 58</u>	54_	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
128	.85	55	8/	.59		.54	.53		
129	.55	.56	.74	.56		.54	.5/		
130	87	.55	.62 1.75	.56		<u>. 562</u>	.52	 	· · · · · · · · · · · · · · · · · · ·
131	.55	.64		.88	3	.56	.56		
132	55	.56	.74	.6		.56	152	 	
1.34	-55	.56	.93 .G	.81		.56	.:53	<u> </u>	· · · · · · · · · · · · · · · · · · ·
/35	.54	.54	:9	.68		.55	.5		
TEST DATE	2-28-11	3.8-11	3-16-77	4-5-7	17	4-15-77	5-9-17		·
TEST BY	7.2		A 2 4			(G)	, ,		
			100	C S C		5 A 187		<u> </u>	



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TWX 910-343-6864

	er's Name:	NASA	· .	s/0 - 704	-35622	s	HEET 62	OF 188
Dissi	<u> </u>	tor @ 10KHz	@ - 55°C	C.R	.C. P/N ST P/N DD. NO	183421/01-1 1238G	186 R	
TEST NO.	XT 1218-	С	·. · · · · · · · · · · · · · · · · · ·	P/0	NO	AS8-32403		
	PERCENT	DISSIPATION	FACTOR WI	TH THERMAI	SHUCK @ 10	ицэ (- 55	°C to +125°	
S/N	Initial D.F.	After 50 Cycles	After 150 Cycles	After 250 Cycles	After 350 Cycles	After 500 Cycles		
1310	. ජුල	.59	67	6	. 59	.55		
	·53 ·	-54	.6	.61	.54	.5		
131 138	.55	.56	.82	.56	.5.5	151		
139	.58	.40	. 8	.1	.6	.56		
140	.55	.8	.8	.59	.58	.54		
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TEST Date	2-38-11	3-8-77	3-16-77	4-5-77	4-15-71	5.9.77		
TEST BY	90		() ()		Trog!	[]		



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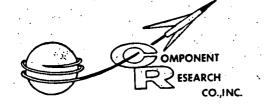
Custon	ner's Name:	NASA	•	s/0 ·	- 70 ¹	+-35622	S	HEET 63	OF 188
TEST:		, -	LAB SUPVR.	rziel	CB	.C. P/N	183421/01-1	186 R	, .
Dissip	oation Fact	or @ 10KHz	ENGR.	4/	4	T. P/N			
TEST NO	XT 1218-0		9.A.	·/-·	1 .)238G	·	
TEST'TE	10500				P/0	NO. 1	NAS8-32403	i	
TEST VO			1			FICATION:		·	
SPECIAL N			·	·	1			•	٠
		ermal Shock		16	-	MIL-C-8342	21, Para. 4	.7.9	
		iid) 500 cy : (2 mins. p					,		
	E LIMITS:	, (2 mms, p			EQUIP	MENT USED:	· · ·	Model No.	ECN No.
		ablished %	D.F. limit	s for	1	edance com	parator	G.R. 1654	1331
this t	est condit	ion.			Pre	cision dec	ade	G.R. 1413	1387
				•		acitor			120
•						perature t mber	est Stathar	n SDG-1	130
· .	•			•	T	rmometer		11 J E-485	1588
								,	•
		,			1	•:			
	DEDCENT	DISCIPATION			<u> </u>				
		After	After	TH THER		SHOCK @ 10 After	After	C to +125°C	<u> </u>
S/N	initiai D.F.	50	150	250		350	500		
		Cycles	Cycles	Cycle	s	Cycles	Cycles		
118	.15	.22	.18	-17	5	.195	.135	,	······································
121	.23	-29	.24	123		.31	.185		
122	.18	.175	.16	.18		.21	.125		
123	.21	.225	.22	ن بر .		.245	18		
124	.17	.195	.185	.18		.215	.14.5		
125	.17	-21	.2	.20.	i	.225	155		
126	.75	.175	.16	.19		· ,3	.21	<u> </u>	
127	.18	-215	.2	.20	5	.215	.16		· · · · · · · · · · · · · · · · · · ·
138	.33	19.5	.19	.19-	5	1205	15	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
129	.24	195	.18	183	<u> </u>	.2	145	<u> </u>	
130	.65	.2	21	.2		.21	./5	ļ ·	
131	:22	.42	.195	.21		.19	.160	<u> </u>	· · ·
132	·20	19	165	19		.195	/35		
134	120	.20.5	18	185		195	.14		
13.5	.18	.185	.115	119	<u> </u>	185	125	<u> </u>	
TEST Date	3-1-71	3-8-77	3-10-11	3.23.7	- 1	415.77	59.17		
TEST BY	四月	-31	7.08			F-02/	708		- · - · · -
			-\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	1000	,	778			<u> </u>



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TWX 910-343-6864

	mer's Name	: NASA		s/o - 704	-35622	\$	SHEET 64	OF 188
Dissi	pation Fac	tor @ 10KHz	@ 125°C	cus	ST P/N D. NO. 0:	83421/01 - 11 238G	86R	
TEST NO.	XT 1218	-c	: 	P/0	NON	AS8-32403	1	
-	PERCENT	DISSIPATIO	N FACTOR W	ITH THERMAL	SHOCK @ 1	OKHz (-55°C	to +125°C)	· · · · · · · · · · · · · · · · · · ·
S/N	Initial D.F.	After 50 Cycles	After 150 Cycles	After 250 Cycles	After 350 Cycles	After 500 Cycles		
136	.24	245	.215	.235	24	.185	. ,	
131	18	.185	1165	.165	18	.125		
138	.20	.20	-17	.19	.185	. /3		
139	.21	-21	.185	,21	.205	1.5		
140	.22	.52	.20	.215	.3/	.16	•	
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	<u> </u>			· ·			,	
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							<u>.</u>	
TEST DATE	3-/-77	3-8-77	3-10-17	3-23-77	4-15-77	59.17	<u> -</u>	
TEST BY	(S)	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	(3)	(C)	728	72		



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TWX 910-343-6864

Custo	omer's Name	: NASA		5/90 70	04-35	5622	· . : · SI	HEET	65	OF	188
TEST:			LAB SUPVR.	Z# -		c. P/N _M83	3421/01-118	6 R			
E.S	S.R.		ENGR.	1/	4	T. P/N					
TEST NO	xT-1218-0		Q.A.	///-			238G ·				· .
TEST T	250-				1		s8-32403	1			· -
TEST V		<u> </u>	┪			FICATION:				-, 1	
SPECIAL					1			•			٠
Acce	lerated The	rmal Shock	per TP-1006	5	-	•		:			
(Liqu	uid to Liqui	id) 500 C	ycles				• '		•		
	°C to +125°0	C (2 mins.	per cycle)		ļ.				<u> </u>		
ACCEPTAN	CE LIMITS:			•	EQUIP	MENT USED:	Model	No.	ECN i	No.	
	are no esta		S.R. limits	for	E.5	S.R. Meter	Clark-	Hess	1130		
this	test conditi	ion.		•	C-1	. 1 .	273		1120		
	• ,				Lat	ole Assembl	y Clark- 27375		1130		
	•		•		[•	. 41 51 5				
	•						,	•			
		•		•	ŀ	•	•		•		
				!							
	F.S.R.W	TH THERMAL	SHOCK ((-55°C t	to. +1	125°C)		•			
S/N	Initial	After	After	After		After	After		1		
0,,,	E.S.R.	50	150	250		350	500 Cycles	ľ		•	
•	INS	Cycles	Cycles	Cycle		Cycles	Lycles	ŀ	.]		
118	.//	.12		.//	. 1	.//	.//				
121	.16	.19	.19	.16		.18	,20)				
122	.10	.10	.10	.10		.10	.09				
123	./3	18	.16	.16	,	.16	.15			-	
124	.10.	.12	.15	112		.12	.//		:		
125	1/3	.13	./3	1/3		.14	.13				
126	.10	10	.10	.10		.10	.00				
121	13	.14	.14	.13		.13	./3	'			
128	.11	./3	./3	./.3		.1.3	./3				
129	13	-13	.12	12		.12	.//				
130	.//	13	.13	1.3	• • •	.13	./3				
131	.12	.13	./3	.13		./3	./3	 			
132	.1/	.//	.//	.//	-	.//	.//			,-	
134	.//	.14	12	.12		13	.//	-			
135	.13	.//	13	.11	-	.11	.10				
TEST	70	"//			,	į.					
DATE TEST	2526-77	3/-77	3-10-77	3-24	77	4-19-71	3-3-77				
BY			Con .	90		(Carl		<u> </u>			



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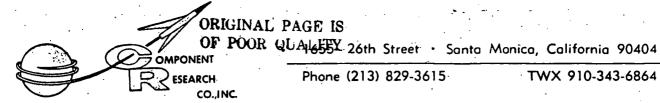
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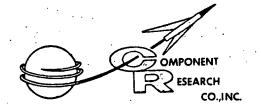
E.S.R	. @ 25°C			CUS	T P/N	33421/01-11 238G		
EST NO.	XT-1218-0					\\$8 <u>-32403</u>	1	
		/ITH THERMA		(-55°C to +				
S/N	Initial E.S.R.	After 50 Cycles	After 150 Cycles	After 250 Cycles	After 350 Cycles	After 500 Cycles		
36	.14	.16	.16	.16	.16	.16		
37	.10	.10	.//	.10	.//	.10		
138	.10)	11	./3	.12		.10		
139		.12	./3	./3	./3	./3		
40	.12	/3	.14	.14	.14	.14		
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ST	228-11	3-7-71	3-10-71	3-24-11	1-111-17	5-2-17		· · ·
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Custo	ome	er's	Name	: 1	NAS	Α			<u>.</u>		Q _	704-	356	22				SI	HEET	67	, · 	OF	18	8
TEST:	- 1	Too	t			·	LAE	3 SU	IPVR.	₹/	,	C.R	.C.	P/I	3 <u>M</u> _ N	3342	21/	01-11	86R					. •
			ak Te		•		ENC	GR.	11	7		cus	ST.	P/N	٧									
TEST NO			-1218	•	-		Q.A	٠.	$\frac{2}{3}$		> `				. 02	2380	ì							
TEST TO	EMI	p. 2	5°C				_			<u> </u>	=		NC			188-	32	403	1					
TEST V				_			7	_				SPEC	IFICA	TIO	N:									
SPECIAL												7			c 021.0	. 1	٥.	lı	7 5					
i			d The						- 1006	5		-	MI	L-	C-8342	٠١,	ra	ra. 4	• / • 5					
-55°C) 1	to +	Liqu 125°C						/cle)							•								
ACCEPTAN	CE	LIMIT	s:				•					EQUII	PMEN	ΤU	SED:		• .	. Mo	del	No	F	CN	No.	
Leal	κaς	ge n	ot to	ex	cee	d IXI	o ⁻⁶ ,	atn	n/cc/s	ec	• .	Fin	e l	ea	k dete	ecto)r	Du	-Pon -120	t.		51		
								•		. •									3.					•
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		•															,		•					
	T	Ini	tial	/	Aft 50	er		Aft	er 0 N	1	4ft	r N		Af	ter 50 N	P	ft 50	er 0 v						
S/N		1x1	0-6			-6			-6			o ⁻⁶			o ⁻⁶	1	ХI	o ⁻⁶	·					
•	1	Pass	Fail	Pa	ss	Fail	Pa	ss	Fail	Pa	ss	ail	Pa	SS	Fail	Pas	s	Fail						•
118	·	/ .			, .		-			,			. /	_		,								
121				-	•		Å			-			1			4								
122							•																٠.	
123										Ţ														_
124						,															•			
125																	·]							
126																		1	,					
121	-																							
138		1.				J.										4								
129		1	·												•			·					·	
130	T					·																		
131	T											٠.	\Box											
132	T													-			\neg				_	· · · · ·		
134	T				Н					Η,				-			\sqcap							
13.5	+	_			_											· ,			ļ		ᅱ			
TEST	1																							
DATE	12	28	-77_	3.0			3:		77				Ι.			5	? <u>5</u>	-77	 			 _		
TEST BY	1	CI F?	TC		\r\cdot\\ \r\cdot\\\ \racket\\\ \r\cdot\\\ \racket\\\ \r\cdot\\\ \racket\\\ \r\cdot\\\ \racket\\\ \r\cdot\\\ \r\cdot\\\ \r\cdot\\\ \r\cdot\\\ \r\cdot\\\ \racket\\\ \r\cdot\\\ \r\cdot\\\ \r\cdot\\\ \racket\\\ \r\cdot\\\ \racket\\\ racket\\\ \r	िं	_	∕û E4	धे	_		7	1		E)	<	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	(P)						



1655 - 26th Street · Santa Monica, California 90404

Phone (213) 829-3615

TWX 910-343-6864

Custon Test	ner's	Name:	NASA	·		s/0	- 704	<u> </u>						68_	OF 188
Seal	Test	@ 25	°C					cu:	ST P/N	l		01-11	86 R		
TEST NO.			3 - c	,	····			P/C	NO	• 02 NA	S8-32	403		<u> </u>	
	Init		Aft	er,	Af	ter 50ル	Aft	er 0 ル		ter 50 ル	Afi	er 0			
s/N	1x	10 ⁻⁶	1X1	0-6	1X 10		1X10	- 6	.1X1		1X10	₎ -6			
	Pass	Fail	Pass	Fail			Pass		7	Fail				•	
136	1		. /		/		1		1						
/37		·	1		٨		1		^		1	,			·
138		·					<u> </u>								
139		<u> </u>	 		<u> </u>		\		· /		<u> </u>		ļ· 		<u> </u>
140			/		,			L	/		/	<u> </u>			
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TEST Date	2-28		3-9-	-17	3-21	-77	4-8	-71	4-20	-77	58	5-77			
TEST BY		्रे ट्रिट		क्ट	Ćķ	ન	(CA)	1	CRO ES.		Ç,	च			



TEST REPORT SUMMARY

Thermal Shock Liquid to Liquid 500 Cycles, -55°C to +125° TEST NO.

REPORT NO. XT-1218A

OMPONENT	500 Cy	cles, -55°C to	+125°d		·
ESEARCH CO.,INC				69 OF	188
PROD. NO0236G		CUSTOMER NASA,	MARSHALL SPA	ACE FLIGHT	CENTER
LOT		CUSTOMER P/N_		•	
1 '		CUSTOMER P/O_		. , .	1
C.R.C. P/N M83421/01-1090R					
DATE COMPLETED April 5,			· · · · · · · · · · · · · · · · · · ·	ì	•
TEST		REQUIREMEN	T 1	ETHOD AGRAPH	ACC REJ
Insulation Resistance		3.11	4.7	.7	20
Capacitance		N/A	4.7	8	20
Dissipation Factor		3.13	4.7	9	20 0
E.S.R.				· .	20 0
Seal Test	• .	3.9	4.7	5	18 2
				,	
_					
	:				
QUALITY CONTROL			DATE		
	SHIPPING	DATA			•
ORDER #	DATE SHIPPED	QTY SHIPPED	. INVOICE #	QTY ST	ÖCKED
	D		· · · · · · · · · · · · · · · · · · ·		
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TWX 910-343-6864

Custon	ner's Name:	NASA		/cs/0 -	704	-35622		HEET 70	OF 188
TEST: r	sulatiòn R	esistance	LAB SUPVR	27	C.R	.c. P/N M8	3421/01-10	90R	
(Tern	ninal to Te	rminal)	ENGR.	Z.	4	ST. P/N			
	· XT 1218-A		Q.A. 7	11	PRO	D. NO. <u>02</u>			
TEST TE	мр. 25°C			~	P/O	NO. NAS8	-32403	. 1 .	<u> </u>
TEST V	OLT. 30VDC				SPEC	IFICATION:			
SPECIAL	NOTES:		<u> </u>		MI	L-C-83421,	Para. 4.7	•7	•
Accelle	rated ther	mal shock p	er TP-1006		-				
	d to Liqui				ŀ			•	
	cles -55°C	to +125°C	(2 mins. pe	r cycle)	1		<u></u>		
ACCEPTANC	E LIMITS:	٠		• .	EQUIF	MENT USED:		Model No.	ECN No.
		30 pA maxi				. Micro V.		H.P. 425A	1480
		After 500		quid		. Test rack		CRC none	647
		i shock the		•	D.C	. volt ohm	meter	Simpson 260	1357
	its @ 25°C	CJ FOI MOXI	mam reakagi	-	Bat	tery pack	. •	N/A	
				-					
	-		٠٠.			•			
			·		l				
	INSULATIO	ON RESISTAN	CE WITH THE	RMAL SH	юск	(- 55°C to	+125°C)	•	
S/N	Initial	After	After	Afte		After .	After		
· .	I.R.	50 Cycles	150 Cycles	250 Cycl) les	350 Cycles	500 Cycles	,	·
			0,0.00	0,0.		3,3.03		<u> </u>	
001	3	2	. 3	5		3	2		
002	4	2	3	5		5.	4		<u> </u>
003	4	5	3	4		3	2		
004	. 2	3	3	7		<u>5</u>	2		
005	2	. 2	3	7		. 4			
006	5	2	4	4		.3	5	·	
007	3	2	3	4		. 2	ı.f.	1.	,
008	. 3	2	. 4	8		<u>3</u>	٠3.		
009	. 3	2	3	. 4			2		
010	17	2	3	4		4	3		
011	8	2	2	8		3	3	<u> -</u>	
012	3	2	2	4		2	2	<u> </u>	
013	_2	2	3 _	4		4	2		
014	4.	2	4	3		5	2		
015	/	2	3	2		. 4	4		
TEST DATE	2-24.77	3-8-77	3-10-97	Z-22-71	,]	4-18-11	4-29-77		
TEST BY	Took	2008	() () () () () () () () () ()	5-25-71		() () () () () () () () () ()	(Bag)		
<u></u>		17/2/		\ <u>^</u>	/	\^>7/		1	1

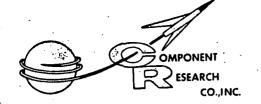


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TWX 910-343-6864

Custom	er's Name:	NASA		<u>5/0 - 704-3</u>	5622	s	HEET 71	OF 188
Ins	ulation Re	sistance @	25°C		.C. P/N		90R	
	rminal to				ST P/N			· · ·
	XT 1218-/				DD. NO. 02		1	
1231 NO.								
S/N	INSULATI Initial	ON RESISTAL After	NCE WITH TH	ERMAL SHOCK After	After	After		
	I.R.	Cycles	150 Cycles	250 Cycles	350 Cycles	500 Cycles		
016	3	2	3	3	3	3		
017	/	2	2 2	4	4	3		
018	.3	2	2	5	3	3		
019	2	2	2	4	3	. 3		
020	/	2	2	6	5	2	·	
						<u> </u>		
		· · · · · · · · · · · · · · · · · · ·						
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			-					
	(CA)							
TEST Date	2-24-77	5- <i>6-11</i>	3-10-77	5:23-77	4-18-17	4-29.77		
TEST BY	(CA)	(2,2)	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	(Car)	(38)	53		



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Custon	er's Name:	NASA	/ 0,	%√0 - ;	704 <u>-</u> 3	35622		SHEET 72	OF 188		
TEST:	lation Res	l c t an c a	LAB SUPVE	7	C.R.	C. P/N M83	421/01-10	90Ř			
	minal to Te		ENGR.	V	4	T. P/N	<u> </u>	· · · · · · · · · · · · · · · · · · ·			
	XT 1218-		Q.A.	17	PRO	D. NO. 023	6G		<u> </u>		
TEST TE				7	P/0	NO. NAS	8-32403	l			
TEST V			 		SPECI	FICATION:					
SPECIAL	NOTES:				1	11L-C-83421	. Para. 4	.7.7			
		rmal Shock	per TP-1006	.	-	·					
Liqu	id to Liqui	id) :	1-) 500			•			-		
	E LIMITS:	mins. per	cycle) 500	cycles		MENT USED:			5644		
1			_:	sie I muum		, Micro V.	Ammotor	Model No. H.P. 425A	ECN No. 1480		
leakad	ge current (ablished li a - 55°C	mits for me	ax i mum		. Test rac		CRC none	647		
leakas	je carrene (- JJ 0				. volt ohm		Simpson 260	1357		
							est :	Statham	130		
			•	chai	mber		SD9-1				
					Thermometer Marshall 1588						
	•				Bat	tery pack		J E-485 N/A			
	INSULATI	ION RESISTA	NCE WITH TH	EDMAL C			- 125°c\				
s/N	Initial	After	After	After		After	After	T	T		
2/14	I.R.	50	150	250	l	350	500				
	· .	Cycles	Cycles	Cycle	:5	Cycles	Cycles				
001	9	.3	. 6	7		6	5				
003	7	3	6	6		7	8				
003	. 7	\mathcal{Z}	7	7		5	10				
cont	5	R	8	. 5		5	7				
005	6	. 2	5	5		6	5	·			
colo	10	2	8	7		6.	9				
001		2	7	. 8		5	7				
008	9	3	7	7	•	. 65	7				
cog	3	3	6	6		.5	6				
010	5	Z	8	4	· ·	. 4	5	•			
011	5	3	E	6		6	12	<u> </u>			
012	4	3	8	. 4	•	.5	6		-		
013	4	2	9	4		6	10				
014-	5		3	5		6	5				
015	5	2	7	4		4	7				
TEST	3-1-77	3-13-71	3-14-77	4-4-	77	4-15-77	5-5-77				
TE ST BY			208	(CA)	,,	(1 mg/s	(T. 18)				
O/S TEST DATE TEST	5	2 2 3-8-71			77	4-1-5-77	7 5-5-77		<u> </u>		

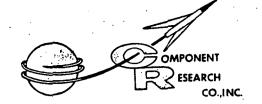


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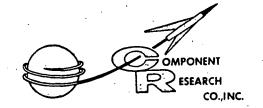
Custome	r's Name:	NASA	s/(o - 704-356	522	S	HEET 73	OF 188
Insul	ation Resis	stance @ - 5	•	C.F	R.C. P/N <u>M</u> ST P/N OD. NO. <u>O</u> 2	3421/01-10		
TEST NO.	XT 1218-A	-	. :	P/0	NO. N/	\\$8 - 32403		
	INSULA	TION RESIST	ANCE WITH	THERMAL SHO	ск (-55°C	to +125°C)		
S/N	Initial I,R,	After 50 Cycles	After 150	After 250 Cycles	After 350 Cycles	After 500 Cycles		
616	5	2	9	4	5	10		
017	6.	2	9	5	4	10		
018	7	6	8	5	4	10.		<u> </u>
019	6	3	7	4	5	12		
020	6	4	10	4	5	5		
					 			
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TEST		· - :				·		
DATE TEST	3-1-77	3.8.77	3-14-71			5-5-77	ļ	
BY	20.28	(A. 38)	(A.S.)	(38)	33	() () () () () () () () () ()		



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TWX 910-343-6864

Custom	er's Name:	NASA		s/0 - 70	4 - 35622		SHEET 74	of 188
TEST:			LAB SUPVR.	30)	C.R.C. P/N _ M	33421/01-10	090R	1
Insul	ation Resi inal to Te	stance rminal)	ENGR.	~	CUST. P/N		<u> </u>	*
<u> </u>	XT 1218-		9.4.	// . [PROD. NO. 0	236G		
TEST TE						AS8-32403	. 1	
TEST VO			1		SPECIFICATION:			
(Liqu	erated The id to Liqu	id)	per TP-1006		MIL-C-8342	l, Para. 4	.7.7	
ACCEPTANCE	E LIMITS:	to +125 C	(Z mins. pe	EL CACLE) EQUIPMENT USED:		Model No.	ECN No.
megohm to liq establ	s minimum. uid therma	After 500 I shock the ts for maxi	ex or 12,000 cycles licere are no mum curren	quid t	D.C. Micro V I.R. Test ra D.C. volt oh Temp. test c Thermometer Battery pack	ck m mete r	H.P. 425A C.R.C. none Simpson 260 Statham SD9-1 Marshall J E-485 N/A	1480 e 647
	INSULAT	ION RESISTA	NCE WITH TH	IERMAL SI	носк (- 55°С	to +125°C)	, , , , , , , , , , , , , , , , , , ,	
S/N	initial	After 50 Cycles	After 150 Cycles	After 250 Cycle	350	After 500 Cycles		
001	28	22	60	23	25	31		
002	25	25	27	30	32	35		
003	29	22	9	18	20	40		
004	.17	15	19	36	47	78		
005	17	/.3	16	15	18	.30		
006	18	11	15	13	15	32		
000	15	14	16	23	11	34		
COB	_ /5	15	4	15	35	50	1	
600	18	16	12	8	11	33		
010	20	16	1	15	19	39		
011	21	15	25	33	22	50		
01.3	25	10	23	8	. 1	43		
	18	8		9	160	47		
013			12		21		- 	
014	44	3	29	29	21	42	- 	
015 TEST	39	. 3/	32	25	<u> </u>	65		
DATE.	2-25-77	3-8-77	3-14-77	4-4-7	7 4-15-77	5.5-17		
TEST BY	Say	(A)	() () () () () () () () () ()	(2) (2) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1	C.S.			



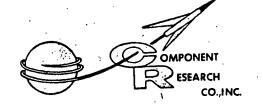
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TWX 910-343-6864

GENERAL DATA SHEET

	ntion Resis	tance @ 12	5°C	cus	.C. P/N <u>M8</u> T P/N D. NO. <u>02</u>	3421/01-109 36G	90 R	, .
EST NO.	XT 1218-	Α .	: 	P/0	NO. NA	s8-32403		
	INSULAT	ION RESISTA	ANCE WITH T	HERMAL SHOO	K (-55°C	to +125°C)	·	
S/N	Initial I.R.	After 50 Cycles	After 150 Cycles	After 250 Cycles	After 350 Cycles	After 500 Cycles		
216	12	15	16	19	25	32		
017	11	7	10	20	13	22		·
018	/3	16	15	19	14	24		·
0.9	20	25	13	17	24	32		
020	27_	25	10	/3	23	28	·	
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EST	0 0 × 3-		2 / 4:5	1.1.	1			
EST	2-28-17	5 E-11	3.14-97	4-4-71	7-15-77	3-3-79 [(20) 3		

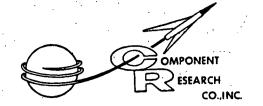
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Custo	mer's Name:	NASA	•	/0.S/0	- 70	4-35622		SHEET 76	of 188
TEST:			LAB SUPVR.	題		.c. P/N _ M8	3421/01-10	90 R	
	itance Drif al Shock	twith	ENGR.	7	4	T. P/N			
TEST NO			Q.A.	12.		D. NO	0236G		· .
TEST TI					P/0	NO.	NAS8-32403		
TEST V			-	•		FICATION:	, ,		
SPECIAL			<u> </u>		ł			• •	•
Acce16	erated Ther	mal Shock n	er TD-1006	:	· _	MIL-C-8342	1, Para. 4	.7.8	
	id to Liqui						• •	`•	
-55°C	to +125°C	(2 mins. pe	r cycle)				` · · · .		
ACCEPTAN	E LIMITS:				EQUIP	MENT USED:		Madal Na	ECN No
loiti	al limit .(0090uF to	0110 uF		1 m	pedance cor	marator	Model No. G.R. 1654	ECN No. 1331
	500 cycles			rma 1		ecision de		G.R. 1413	1337
shock	there are i	no establis	hed % cap.			pacitor			5 , 5 .
drift	limits for	this test	condition.			·			•
		•				•			
				, .	ļ				
		•			·				
		···	·	 	<u> </u>				· · · · · · · · · · · · · · · · · · ·
			CHANGE WITH					c)	·
S/N	Initiai	After	After	Aft		After	After		·
	Cap.	50	150	25		350	500		` } .
	in uF	Cycles	Cycles	Lyc	les	Cycles	Cycles		
001	.009922	-035	+.14.	+.0B	٦	-025	-02		
002	.009937	t. 06	+.145	+ B		+.71	±/135		
003	coopa 3	055	+.135	+.01		-06	-075		
004	000018	+.035	+.135	+.02		-03	-045		
005	1 ///		+.115	00		- 05	1	- 	
							-07	†	·
allo	, , , , ,		+.17.5	+.0b		t.005	05	<u> </u>	-
607		<i>1</i> ,	+ 135	+05	-	- 005	7015		
608	1009856		+.162	1.04	5	-025	-04	 	ļ
000	. cocicilis	1.165	+175	t.06	5	1.225	+.5	· ·	
010	.000898	+.065	+.15	t. 0.5		-02	015		
011	000189	1.07	t.2	+00	5	-025	-,015	<u> </u>	·
013	009804	7625	+.125	1.03		7.03	-075	,	-
013	209908	-015	+.10	00		-07	-115		
014	£09917	-015	+.115			-035	-055		
				+.01					
015 TEST	. progres	-015	+162	-p- 674	-	CZ .	-045	 	<u> </u>
	ln - /	. سمید ورا		l		.,	منت منت ا	1 .	1 .
DATE	224-11	3-7-77	3-10-11	3-23	77_	4-18-71	5-2-17		



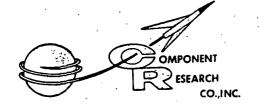
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TWX 910-343-6864

GENERAL DATA SHEET

ORIGINAL PAGE IS OF POOR QUALITY

Capac	itance Drif	r+ @ 25°C wi	ith	c.	R.C. P/N M8	3421/01-109	90 R	
•	itance brit al Shock	L.W 25 6 W		1	JST P/N			
inerm		•	·	Pf	ROD. NO. 02			· · · · · · · · · · · · · · · · · · ·
EST NO.	XT 1218-A		· · · · · · · · · · · · · · · · · · ·	P/	O NO. NA	s8 - 32403		
	PERCENT C	APACITANCE	CHANGE WIT	THERMAL	,SHOCK (-55	°C to +125	°C)	
S/N	Initial Cap. in uF	After 50 Cycles	After 150 Cycles	After 250 Cycles	After 350 Cycles	After 500 Cycles		
016	.009831	+035	+.12	t.025	035	-045		
017	.000011	t.05	+.105	1.025	- 625	-045		된 1
018	.009846	1.065	+.125	1.015	-06	-06		
019	10004	DR5	<i>+.</i> /	1.015	05.5	-c8		
020	.orgest	t.045	t.115	+ 005	-05	-07		
		·						
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EST	2-24-71	3-1 77	2 10 77	202 07	4-18-17	· C · · 2 · 17 7		1



1655 - 26th Street · Santa Monica, California 90404

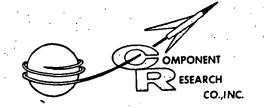
Phone (213) 829-3615

TWX 910-343-6864

GENERAL DATA SHEET

ORIGINAL PAGE IS OF POOR QUALITY

Custo	mer's Name:	NASA			4-35	5622	SI	HEET 78	OF 188				
TEST:	citance Dri	f+ wi+h	LAB SUPVR	39	C.R		M83421/01-						
Ther	mal Shock	it with	ENGR.	111	£ .	 г. Р/N							
	XT 1218-	·A	Q.A.	B/1		D. NO. 02	36G		·				
TEST TE				<u></u>	P/0	NO. NA	s8-32403	1					
TEST VO	OLT. N/A				SPEC	FICATION:							
SPECIAL I	TOTES:				١.	00101		- 0	:				
1		rmal Shock	per TP-100	6	_MIL-C-83421, Para. 4.7.8								
	id to Liqui		I-\ FO	01-		•		•					
ACCEPTANO	E LIMITS:	2 mins. pe	cycle) 50	U CYCTE	EQUIPMENT USED: Model No. ECN No.								
There	are no est	ablished in	itial capac	citance	Imo	edance.com		.R. 1654	1331				
and %	capacitanc	e drift lim			Pire	cision dec		.R. 1413	1337				
test	ondition.					acitor	· .	A - A l	120				
			·.			perature to mber		tatham D9-1	130				
]			•			rmometer		arshall	1588				
		•					J	E-485					
·	;				·			,					
	PERCENT	CAPAC I TANC	E CHANGE WI	TH THER	MAL	SHOCK (-5	5°C to +12	5°C)					
S/N	Initial	After	After	After		After	After						
	Cap.	50	150	250	•	350	500						
	in uF	Cycles	Cycles	Cycle	S -	Cycles	Cycles						
001	.009748	t.03	+.075	1.04	5	+.10	1.095						
002	.009762	+015	1.06	+.07.	5	+.39	+1.45	·					
10C3	.009622	t.005	1.025	- 02.	5	+.035	+ 005						
004	.009615	+.015	t.055	-0R		4.085	+.065						
115	009740	t. 025	+045	-00	5	+.05	1.025						
006		0.00	0.00	7/33	5	+.65	t.02						
007	09770	+.055	t. 10	1.023	5	t.085	1.045						
008	009692	t.04	+.11	1.06		1.075	t.6.7						
009	MARIA	1.045	+15	-07		+.17	7.58		٠				
010	009724	+.02	+.155	-02	5	+ 055	1.065	<u></u>					
011	009624	+045	t. C.B	+.06		+.09	+, 13						
012	.009643	-01	-015	+.07		-015	t.025						
013	.009741	-02	-035	-07		702	+.015						
014	.009761	+.035	+.015	+ 02		1.065	t.055						
015	.009613	t.015	t. 02	r.08	5	+065	T.10						
TEST DATE	3-1:77	3-8-17	3-14-77	4-4-9		4-15-77	5:5:77						
TEST BY		(P. Car	(Co)	(Sala)		100 B	() () () () () () () () () ()	· · · · · · · · · · · · · · · · · · ·					



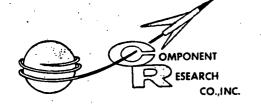
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Custo	mer's Name:	NASA	s/0) - 704-356	22	S	HEET 79	OF 188				
Capac Shock		⁻t @ - 55°C v	vith Therma	cu:	ST P/N	33421/01 - 10						
TEST NO.	XT- 1218-A	<u> </u>	•	P/0	NONA	158-32403	· · · · · · · · · · · · · · · · · · ·					
	PERCENT	CAPAC I TANCE	CHANGE WI	TH THERMAL	H THERMAL SHOCK (-55°C to +125°C)							
S/N	Initial Cap. in uF	After 50 Cycles	After 150 Cycles	After 250 Cycles	After 350 Cycles	After 500 Cycles						
016	.009659	+.055	+.065	7.03	1.095	t.3.4						
	.009736	t.045	t.05	-01	t.055	+ D35						
1 7.	109674	+.055	+.05	1.0%	+05	1.01						
1	.009519	4.06	+:075	-005	1.06	1.015						
020	, , ,	+. 255.	t.105	0.00	+10	1.055						
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TEST	3-1-90	38-11	3014-77	4.4-77	4-15-77	5.5-17		-				
TEST BY	(Se)	(CA)	(3)	(SE)	(3)	(3)	·					



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TWX 910-343-6864

Custo	mer's Name:	NASA	/3	₹ S/0	- 70	04-35622		SHEET 80	OF 188	
TEST:	oltones Dul	Ca	LAB SUPVE		C.R	.C. P/NM	33421/01-1	090R		
1	citance Dri nal Shock	rt with	ENGR.	V		T. P/N				
	o. XT 1218-A		Q.A. 7	1	PROD. NO. 0236G					
TEST TE	EMP. 125°C				P/C	NON	\s8 - 32403	,		
TEST V	OLT. N/A		. '		SPEC	IFICATION:		. •		
SPECIAL		,				<u>4</u> Onla		- 0		
(erated The		per TP-1006	5	-	MIL-C-8342	1, Para. 4	.7.8		
	uid to Liqui to +125°C,		r cycle. 50	00 cvc1			•		, , ,	
4	CE LIMITS:			, ,		MENT USED:		Model No.	ECN No.	
There	are no est	ablished in	itial capa	citance	l mp	edance comp		G.R. 1654	1331	
	capacitanc				Pre	cision deca		G.R. 1413	1337	
test	condition.		•	•		acitor perature te		Statham	130	
						perature to mber		SD9-1	150	
				·		rmometer		Marshall	1588	
							•	J E-485		
ł		•	•							
	PERCENT	CAPAC ITANC	É CHANGE WI	TH THER	RMAL	SHOCK (-	5°C to +1	25°C)		
S/N	Initial	After	After	After		After	After	Ī		
	Cap.	50 Cual as	150	250		350	500		·	
·	in uF	Cycles	Cycles	Cycle	es 	Cycles	Cycles			
001	.009968	+.015	005	-,00.	5_	-01	1.025			
002	.009966	1.015	+.01	+.79		+1.05	+2.05			
003	.009859	+.015	-005	-01		005	+ .02			
004	.010014	01	TO3	-033	5	-035	005		ļ <u>.</u>	
005	.009950	t.015	005	-000	5_	-005	1.02			
006	009896	+.005	- 005	-003		7005	7.025			
07	.009940	4.005	-005	-003	<u>-</u>	015	+.015	<u>;</u>		
008	.009896	+.005	-025	-02	5	703	005			
609	.009912	-005	-015	0.00		+.19	t. B	 		
010	2940	+.025	+015	+01	:	+015	1.045	-		
011	.009B3B	+.005	005	1.00	5	t.005	r.03.5	-		
012	.009824	<i>-035</i>	-04	05	5	-075	-06			
013	.cog40	0.00	-005	-000	5_	-015	t. 005			
014	DE19945	+.005	000	t.000	<u>5</u>	- 005	t.CR	 		
015	109520	02	T.035	-03	5	-05	-01		·	
TEST DATE	2-28-17	3-8-17	3-14-77	4-4-7	1	4-15-11	5571	<u> </u>		
TEST BY	12.3	[30m]	2.8	200	>	7.8	13.88 ×			
										

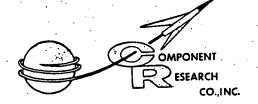


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	mer's Name	: NASA		s/0 - 7	/04 - 35622	s	неет 81	OF 188		
Capaci Shock	tance Drif	t @ 125°C w	ith Therma	1 0	C.R.C. P/N		090R	• • • • • • • • • • • • • • • • • • • •		
	VT 1010	^			PROD. NO. 0236G P/O NO. NAS8-32403					
TEST NO.	XT-1218									
0/01	PERCENT Initial				AL SHOCK (-		5°C)	 		
S/N	Cap.	After 50 Cycles	After 150 Cycles	After 250 Cycles	350	After 500 Cycles	,			
016	.009860	035	-03	-04	-065	-045				
017.	.0099.57	+015	+.01	+.015	7.01	+. 63				
018	.009902	015	015	-015	035	-02				
019	.009750	-015	-, 03	015	-04	-02				
020	.009893	-005	-015	-005	-015	+01				
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TEST DATE	2-28-77	3-8-77 .	3-14-77	4-4-17	4-1577	5:5-71				
TEST BY	(A.S)	1 100	10 PM	SA SA	[0.3]	5.8		·		



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GENERAL DATA SHEET

Custo	mer's Name:	: NASA	/	₹/0 -	704	-35622	· · · SI	HEET 82	of 188
TEST:			LAB SUPVE	?			83421/01-10	90 R	
	pation Fact	tor @	ENGR.		l .	ST. P/N			
1 KHZ		· · · · · · · · · · · · · · · · · · ·	1 10				236G		
	<u> </u>	<u>-A</u>	Q.A.		l '	· · · —	AS8-32403	t	· · · · · · · · · · · · · · · · · · ·
TEST TE		<u> </u>				IFICATION:	<u> </u>		
TEST VO					1		·	•	
Accele	rated Therm	ial Shock p	er TP-1006		M	IL-C-83421,	Para, 4.7.	.g ·	
	d to Liquid	i) (2 mins. pe	- avala)			, _ ,			•
500 c	ycles	,2 mms. pe	i cycle)					•	•
1	E LIMITS:				EQUIP	PMENT USED:	Me	odel No.	ECN No.
	l limit -			•		edance comp		.R. 1654	1331
		liquid to no establis		rma I	ł	cision deca acitor	ide G	.R. 1413	1337
		test condit			Сар	acitor	·-		
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	DEDCENT	DICCIDATIO	L FACTOR IVI	Til TUCO		CUOCK / E	T 9 0 4 - 10 5	.001	
	Initial	DISSIPATION After	After	After		After	5°C to +125 After		I
S/N	D.F.	50	150	250	•	350	500		
	3.6.0	Cycles	Cycles	Cycle	S	Cycles	Cycles		·
			<u> </u>	· · · · · · · · · · · · · · · · · · ·					
.001	.08	.08	.09	.08	5	.07	. 085		
002	-075	.085	.095	1/2	5	.175	. 2		
003	.075	.085	. 085	.08.	5	.075	.08		
oct-	015	.095	.085	.08	2	.075	.085		
105	.075	. 085	.09	.08.	5	.08	085		
006	.015	.085	.09	.08	5	10B	1085		·
001	.075	.085	.085	.08		1075	.085	,	
008	1075	.075	.085	.08		,095	.08		
000		1055		1 .		.055	.09.5		
73	.075	1	109	.08			,		·
E10	.07.5	.08	.085	.07		.075	075		
011	1075	.08	055	.05		.075	.015	· · · · · · · · · · · · · · · · · · ·	· _ ·
C12	.075	.CB	.085	.08	3	· <i>C</i> 75	1055		
013	08_	.085	.09.5	.08	5	108	.09		
014	.075	.08	.085	107	5	.05	.085		
E15	075	1075	OF.5	·OB		.075	.08		
TEST DATE	C-24-71	3-7-27	3-10-71	3-23		4-18-11	52.17		
TEST	[208]	X 288	[20g)	50	_	200	_		
BY	1 1579	I \^/	1 1503	\'_{_{\mathcal{L}}'\\\ \nabla_{\mathcal{L}}'}\)	9	1 マングー	77.08	•	1

F-634-1



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TWX 910-343-6864

Custo	mer's Name:	: NASA	S	/0 - 704-3	5622	S	HEET 83	of 188
Diss	ipation Fac	ctor @ lKHz	@ 25°C	cu	R.C. P/N ST P/N OD. NO. 023	83421/01-1		
TEST NO.	XT 1218-A	\ .	• . •		NO. NAS	8-32403		
	PERCENT D	ISSIPATION	FACTOR WIT	H THERMAL	SHOCK (-5	5°C to +12	5°€)	
S/N	Initial D.F.	After 50 Cycles	After 150 Cycles	After 250 Cycles	After 350 Cycles	After 500 Cycles		
016	.075	.08	.085	.075	.075	.075		
017	.08	.095	.09	1075	1075	1075		
OB	.08	1085	.09	.08	.08	.08		
019	.07	.075	.085	.08	.075	.08		
030	10/5	.09	.075	075	075	.08		
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TEST DATE	2.24.77	3-7-77	3-10-71	3-23-11	4-16-77	5-2-77		
TEST BY	438	S	1	9	(, C)	100g		



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Custo	mer's Name:	NASA		<u>~</u> \$/0:	 - 70	4-35622		SHEET 84	OF 188	
TEST:			LAB SUPVR	39	C.R.C. P/N M83421/01-1090R					
Dissi IKHz	pation Fact	or@	ENGR.	4//	4	T. P/N			•	
TEST NO	XT 1218	-A	0.A. D	1/	1		236G			
TEST T	EMP55°C			7	P/0	NO	IAS8-32403	}	:	
TEST V	OLT. N/A				SPECI	FICATION:				
(Liqu	erated Ther id to Liqui	d) :			_	MIL-C-8342	l, Paṇa. ≀	+.7.9		
-55°C 500	to +125°C cycles E LIMITS:	(2 mins. pe	er cycle)			·		· · · · · · · · · · · · · · · · · · ·	· _ · · _ ·	
ACCEPTANG	E LIMITS:	•		,	EQUIP	MENT USED:		Model No.	ECN No.	
	are no est est condit		D.F. limits	s for	Pred	mpedance c cision dec acitor	omparator ade	G.R. 1615 G.R. 1413	1331 1337	
						perature t mber	est	Statham SD -1	130	
	· .					rmometer	<i>.</i>	Marshall J E-485	1588	
		•	•					3 L-40)		
		······································			<u> </u>			<u> </u>		
			FACTOR WIT					25°C)	T .	
S/N	Initial D.F.	After 50	After 150	Afte 250		After 350	After 500	·		
		Cycles	Cycles	Cycl		Cycles	Cycles			
001	.4	.38	.38	.4		.39	.39			
103	.4	.38	.38	.5		.44	.61			
003	.39	-38	・37	.39	, .	.37	<i>ਂ</i> ਤ8			
coil	139	.37	.37	.34		·38	·38			
665	.39	-36	35	139		.3e	.39			
106	.4	.39	.38	.4-		.39	-33		<u> </u>	
107	39	.૩૪	-37	.39		.41	.38	_		
115	.39	.38	.37	.39	- 1	<i>.38</i>	.39			
609	.39	138	.37	.4,		. 4.1	.61			
010	.39	.39	137	139	2	.38	.39	·		
011	.39.	,38	.38	.45		.38	. 34	:		
012	39	. ૩૮	38	.4		.45	.39			
013	39	138	.38	.4	I	,38	(38			
014	.39	138	,38	.39	- 1	,3€	.39			
015	.4.	,36	36	14		·3E	.39			
TEST DATE	3-1-77	3- <i>8-11</i>	3-14-11	4-4-7	7	4-15-11	5.5-17			
TEST BY	() () () () () () () () () ()	() () () () () () () () () ()	(P)	- (S)	5 -	(Ling)	E. 28			



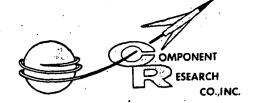
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GENERAL DATA SHEET OF POOR QUALITY

Dissip	oation Fact	tor @ 1KHz (•	CUS PRO	C.R.C. P/N M83421/01-1090 R CUST P/N PROD. NO. 0236G P/O NO. NAS8-32403						
7231 110.			EACTOR WIT		P/O NO. NASO-32403 RMAL SHOCK (-55°C to +125°C)						
s/N	Initial D.F.	After 50 Cycles	After 150 Cycles	After 250 Cycles	After 350 Cycles	After 50 0 Cycles					
016	.39	.37	.38	.39	.37	.38					
017	39	.37	-37	.39	.37	.38					
018	.39 .4	.38	.38	.4	.39	.39					
019	.39	.37	.37	.41	.37	.3€		. ·			
030	.39	.37	.36	.39	.37	.38					
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TE S,T	3-1-11	3.8.11	3-14-17	4-4-17	11 15 7	F E 7	<u> </u>	·			
DATE TEST By	Town of	10.38)			4-1571	3.3/3.	ļ	<u> </u>			



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TWX 910-343-6864

GENERAL DATA SHEET

ORIGINAL PAGE IS OF POOR QUALITY

Cueto	mer's Name	. NACA						100			
TEST:	mer s Name	: NASA	LAB SUPVE	5/0	704-35622		SHEET 86	OF 188			
	pation Fac	tor @ IKHz		<u> </u>	C.R.C. P/N <u>M83421/01-1090R</u>						
			ENGR.	Ve	CUST. P/N						
FEST NO	XT 1218-	4	Q.A. 2	11	PROD. NO. 0236G						
TEST TE	MP. 125	5°C			P/O NO	AS8-32403	· · · · · · · · · · · · · · · · · · ·	<u> </u>			
TEST VO	DLT. N	/A	7 .		SPECIFICATION:						
SPECIAL N	IOTES:		-1		W. 0 03/10		7 0				
		mal Shock p	er TP-1006		MIL-C-8342	i, Para. 4	./.9				
	d to Liquid			•			·				
-300°c	ycles	(2 mins per	cycle)		·	· · · ·	<u> </u>				
CCEPTANC	E LIMITS:			.•	EQUIPMENT USED:		Model No.	ECN No.			
		ablished %	D.F. limit	s for	Impedance com		G.R. 1615	1331			
this t	est condit	ion.			Precision dec	ade	G.R. 1413	1337			
•		· · · .		• • •	capacitor Temperature t	oct	Statham	130			
	٠.		•		chamber	and the second s	SD -1	יערי			
	•			•	Thermometer		Marshall	1588			
							J E-485	•			
	•						•				
	חבווייי	DICCIDATION	V FACTOR :::		<u> </u>						
:					MAL SHOCK (-		25°C).	<u>-r</u>			
S/N	Initial D.F.	After 50	After 150	After 250	After 350	After					
	0.1.	Cycles	Cycles	Cycle		500 Cycles	·	` \			
				0,0.0	0,0100	0,0103					
001	015	015	.015	.015	1.015	.02					
002	.015	03	.02	.03	1.035	.045	·	· ·			
003.	.015	.015	015	1016	· ·	.02					
004	.015	.015	.0/5	.015		.02		<u> </u>			
	_	1		l .				 			
005	0/5	.015	.015	.015		.02	+				
006	015	0/5	.015	.02	- 0.05	02	.+	+			
007	.015	.0/5	:015	1.01		0/5	1				
008	.015	015	.015	.04	5 015	.015	 	<u> </u>			
007	.01	.015	.015	.013	5 .015	. 62.25					
010	.015	0/5	.015	.013	5 .015	015					
011	. 015	015	.015	0/5	·	.015					
012	.015	.0/5	.015	-0/3		015					
		1		1			1				
013	.015	.03	.02	.02	Į.	025	' 	 			
014-	.015	.015	.015	.02		.02	 				
C15	.015	03	.C2	.03	.0.2	03					
TEST Date	2.28-17	3.8-77	3.14.77	4-4-7	7 4-15-97	1572					
	~ /~ / /										

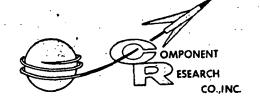


1655 -	26th	Street	•	Santa	Monica,	Cali	fornia	90404	
				<u>:</u>					_

Phone (213) 829-3615

TWX 910-343-6864

Cust	omeric Name	: NASA		c /o	_ 70)4-35622		SHEET	87	OF 18	8
TEST		· · · · · · · · · · · · · · · · · · ·				.C. P/N			-	<u> </u>	<u> </u>
Diss	ipation Fac	tor @ 1KHz	@ +125°C			T P/N	1107-121701	10000			
·	· .		•				0236G				 -
TEST NO.	XT 1218-A		1			NO	NAS8-32403				
	PERCENT D	DISSIPATION	FACTOR WIT	H THERMA	MAL SHOCK (-55°C to +125°C)						
S/N	Initial	After	After	After		After	After				
	D.F.	50 Cycles	150 . Cycles	250 Cycles		350 Cycles	500 Cycles	·		l.	
	سر. ۵		•								
016	.015	.015	.015	.015	1	.015	.02	 			
017	.0/5	.015	.015	.015	- 1	.015	.03	ļ		. ` '	 -
018	015	.045	.015	.03	- 1	.615	.02				
019	.015	.015	:015	.03		.015	.0.2				 -
020	.015	.015	.015	1015	5 ,	.015	.015	<u> </u>			
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TEST DATE	2.28-77	5.8-77	3-14-11	4-4-77	1	4-15-77	5577				
TEST BY	1 (1 () () () () () () () () (3	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	(Sep)	,		(E8)				



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TWX 910-343-6864

GENERAL DATA SHEET

Custo	mer's Name:	NASA		s/0 - 7	04-35622	SI	HEET 88	OF 188			
TEST:	····		LAB SUPVR.	हुने c	R.C. P/N M8	3421/01-109					
Diss 10 K	ipation Fac	tor @	ENGR.	{ 	UST. P/N						
	XT 1218-	Α	9.A. (7)		ROD NO 02	36G					
TEST TE			- Sell	//	/O NO. NA	s8 - 32403	1				
TEST V	11.10			SPI	ECIFICATION:						
(Liqu	erated Ther		•	,	MIL-C-83	421, Para.	4.7.9				
500	cycles	(2 mins. p	er cycle)								
ACCEPTANO	E LIMITS:			EQ	UIPMENT USED:	<u>-</u>	Model No.	ECN No.			
	are no est est condit	ablished % ion.	D.F. limit	s for Pi	Impedance cor recision deca apacitor	mparator G		1331 1337			
	-	•			•••			•			
-					<i>i</i>		•				
							,				
	PERCENT D	ISSIPATION	FACTOR WIT	THERMAL	SHOCK	(~55°	C to +125°C)			
S/N	Initial	After	After	After	After	After					
	D.F.	50 Cycles	150 Cycles	250 Cycles	350 Cycles	500 Cycles	. 1				
		Cycles	cycles	Cycles	Cycles	Cycles					
001	.175	.18	.19	.185	.18	195					
002	.17	.205	205	.185	.21	.22					
663	.17	.165	.18	.175	.175	.185	·				
col	.17	.19	185	.175	1.7	185					
005	./7	٠٤	.19	.185	175	.195		· · · · · · · · · · · · · · · · · · ·			
006	.18	.19	:205	195	.195	205					
007	.16.5	19	18	165	.165	175		<u> </u>			
008	.175	.18	.195	.185	.18	.185					
cog	165	16	.185	.175	-115	.195					
010	.165	.175	.175	165	.165	.19		<u> </u>			
011	.16	185	.185	17	.17	165		·			
018	.17	185	.185	.175	.17	.19					
013	.195	.215	235	.225	.22	.23		·			
014-	.175	18	.19	.18	.165	.305					
015	.16	.16	.175	.165	165	.175					
TEST Date	224-11	3-6-71	3.10-17	3.23.77	4-16-77	· ゴボ-77					
TEST BY		() () () () () () () () () ()	Con	C. C.	(30)						
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1655 - 26th Street · Santa Monica, California 90404

Phone (213) 829-3615

TWX 910-343-6864

Custor	mer's Name:	NASA		s/0 - 704	- 35622	S	HEET 89 C)F 188			
	pation Fact	or @ 10 KHz	@ 25°C	CU	ST P/N	236G	90R				
TEST NO.	XT 1218-A		:		NON	IAS8-32403	1				
	PERCENT	DISSIPATION	FACTOR WI	TH THERMAL	THERMAL SHOCK (-55°C to +125°C)						
s/N	Initial D.F.	After 50 Cycles	After 150 Cycles	After 250 Cycles	After 350 Cycles	After 500 Cycles	,				
016	.16	175	.18	.165	.165	.175					
017	.175	.195	.19	17	.165	.175					
08	18	.19.5	.20	.185	.19	.19					
019	.17	.195	.19	.185	18	.185	:				
020	165	.195	.17	165	.175	18		<u> </u>			
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TEST DATE	2.22.97	3.8-11		3-23-77	478-77	52.27					
TEST BY	1/2 3 V	1/90	(Sec)	(0,000)	Coc	Tang)	1 1				

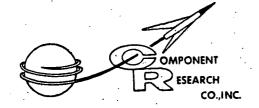


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	• • •							• *
	omer's Name	e: NASA		- ۶/۵	704-35622		SHEET 90	OF 188
TEST:			LAB SUPVR.	230	C.R.C. P/N M8	3421/01-1	090 R	
Dissi _l	pation Fact	tor @	ENGR.		CUST. P/N			
TEST NO		-A	9.4.	177	PROD. NO. 02	36G		
TEST TE				if.		ś8 - 32403	÷	
TEST VO			7		SPECIFICATION:	· · · · · · · · · · · · · · · · · · ·		
SPECIAL N								
(Liqui -55°C : 500 cy	id to Liqui to +125°C ycles	rmal Shock id) (2 mins. pe			-MIL-C-83421	, Para. 4	.7.9	
ACCEPTANC	E LIMITS:				EQUIPMENT USED:		Model No.	ECN No.
There	are no est	ablished %	D.F. limit	s for	Impedance com		G.R. 1615	1331
this t	est condit	ion.			Precision deca	ade	G.R. 1413	1337
			· · · · .		capacitor Temperature to	· eqt	Statham	130
· ·			•		chamber	es c .,	SD -1	.,,,
	•	•			Thermometer		Marshall	1588
		•	٠		·		J E-485	
	PERCENT (DISSIPATION	FACTOR WIT	H THERM	AL SHOCK	· (-55°	C'to +125°C)
S/N	Initial	After	After	After		After		:
	D.F.	50	150	250	350	500		•
·		Cycles	Cycles	Cycle	s Cycles	Cycles		
001	.5	.4-8	48	.49	.49	.48		
002	.5	.49	.48	53	చ′	.65		
.003	.48	48	.4-8	.48	.4B	4.5	<u> </u>	
004	.48	. 4.7	.47	.4.8	.48	46		
e05	.48	,48	.49	.49	.49	.46		
006	ۍ.	. 4-9	. 4-9	.5	49	. 4-6		
001	.48	.47	.47	.49	.55	.46		
008	49	.49	.5/	.49	.48	46	<u> </u>	
009	.4-8	4.17	.48	.47	. 4-9	.61		
010	.5	49	.4-8	.48	.47	.46		
011	.48	.48	4-7	.62	.47	.45		
CIR	.49	.49	.49	.5	.54	.51		-
013	.52	.5	.51	.51		.47		
014	.49	.48	.48	.51	.49	.45		
.015	.51	.5	.48	.5	.45	.45		
TEST DATE	3-1-11	3-8-77	3-14-77	4-4-	17 4-15-77	55-77		
TEST BY	Co.	(C. C. C. C. C. C. C. C. C. C. C. C. C.	C. S. C.	(Per)		Co C		
<u> </u>		1 \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\		1>&%}_		<u> </u>		_i

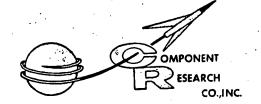


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	er's Name: Dation Fact	tor @ 10KHz	@ - 55°C	C.R	.C. P/NM	33421/01-10	90R	, *•
. •				• 1 .	ST P/N	·		
	VT 1010 A		:	4	D. NO. 02	2 <u>36G</u> \\$8 - 32403	1	
EST NO.	XT 1218-A							
s/N	PERCENT (OISSIPATION After	FACTOR WIT	H THERMAL :	SHOCK After	(-55°C After	to +125°C)	
	D.F.	50 Cycles	150 Cycles	250 Cycles	350 Cycles	500 Cycles		
016	.48	.47	.49	.48	.48	.45		
017	.48	1 '	.49		.47	.46		
0,8	.5	49	.5	.48 .5	15	5		
019	.5	.48	.48	-53_	.48	.46		
020	.49	.47	47	.48	.48	.46		
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<u> </u>						· .	·	
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	<u>. </u>							
TEST	مرب رم	2 0 4 1	2 1/ 1:0	4-4-71	4-15-77	5.5.7.		
DATE TEST BY	7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 -	3-6-77	3-14-17	Co	775//	5.5.77		

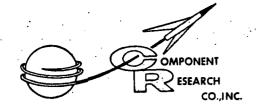


1655 - 26th Street · Santa Monica, California 90404

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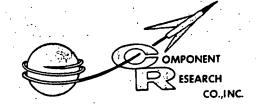
	omer's Name	e: NASA		<u>- ۶/٥چ</u>	704-35622	S	HEET 92	OF 188
rest: Nicci:	pation Fact	tor @	LAB SUPVR	ŽÍ	C.R.C. P/N	183421/01-10	90 R	
10 KH	z z		ENGR.	1/	CUST. P/N		·	· · · · · · · · · · · · · · · · · · ·
EST NO	· XT 1218-	-A	Q.A.	1/1/	· · · —	0236G		
rest te	MP. 125°]			IAS8-32403	<u> </u>	·
TEST VO					SPECIFICATION:	•		
(Liqu	erated Ther	rmal Shock id) -55°C	to +125°C	5	_MIL <u>-</u> ç-8342	21, Para. 4.	7.9	
	s per cycle	e) 500 cy	cles					
	E LIMITS:	, , , , , , , , , , , , , , , , , , ,			EQUIPMENT USED:	_	lodel No.	ECN No.
	are no est est condit	ablished % ion.	D.F. limit	s for	Impedance con Precision de capacitor	•	i.R. 1615 i.R. 1413	1331 1337.
					Temperature chamber		itatham D -1	130
	·		•		Thermometer		Marshall JE-485	1588
	PERCENT D	DISSIPATION	FACTOR WIT	'H THERM	AL SHOCK	(-55°C	to +125°C	·)
s/N	Initial D.F	After 50	After 150	After 250		After 500		
	_	Cycles	Cycles	Cycle		Cycles		
001	.045	.06	06	.06	5 .065	.075		
002	.05	.055	065	.//5		165		
003	.045	055	.055	.06	.065	.07	,	
004	.04	.05	. o55	.05		.065		
105	.045	.05.5	.06	.06	5 .065	.08		
006	.06	.01	.015	08	· 1	.09		
CCI	.05	.045	.05	,05	.055	05		
008	.0.45	.065	.065	.66	1	.075		
m	.04.5	.05	.05	.05	.1 /	.08		
OIC	.035	.045	.045	.05	1	.055		
0//	.035	.05	.055	.06				
CVR	.045	.655	.06	.6b	1	.065		
013	.075	.095	.095	.10	/	.115		
014	.05	.065	.065	.07		.08		-
015	.04	065	.055	.06	1 /	1		1
TEST							 	
DATE	2-28-71	3-8-17	3-14-77	4-4-	7 4-15-77	55.77	 	
TEST .								



Phone (213) 829-3615

TWX 910-343-6864

Dissi,	oation Fact	or @ 10KHz	@ 125°C	cus	.C. P/N	33421/01-109		OF 188
<u> </u>	·				D. NO. 0	236G AS8-32403) .	<u> </u>
TEST NO.	XT 1218	8-A	-	P/0	NO. N	130=32403		
				TH THERMAL			C to +125°(;)
s/N	D.F.	After 50 Cycles	After 150 Cycles	After 250 Cycles	After 350 Cycles	After 500 Cycles	,	
016	.045	055	.055	.055	.055	.065		
oij	.04	.055	.065	:055	.655	.065		
018	.055	.065	.065	.075	:075	.075		
019.	.045	.06	.06	.085	.065	065		
020	.045	.055	.055	.06	.06	.06		
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TEST	- \\	~~~~~		7 7 7	, V.	(2000)		
DATE TEST	2-28-77	3-8-77	7-14-17 [TNB]	1700	4-15-77	5577		



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TWX 910-343-6864

Custom	er's Name:	NASA	\$4	Q - 704 - 356	522	S	HEET 94	OF 188
TEST:			LAB SUPVE. 2	C.R	.c. P/NM8	3421/01-109	00 R	
	E.S.R.		ENGR.		ST. P/N			
TEST NO	XT-1218-A		0.4.		D. NO. 023	6G		
TEST T	EMP. 25°C				110.	8-32403		·
	OLT. N/A			SPEC	IFICATION:			
SPECIAL	·	1 01 - 1		06	•			•
(Liqu	erated Ther id to Liqui to 125°C (d) 500 Cycl	es	U6			t .#.	
	CE LIMITS:	· .		EQUII	PMENT USED:		N 50	
	are no esta test condit		S.R. limits		S.R. Meter ble assemb		 11	<u>No.</u> 130 130
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							•	
	E.S.R. WI	TH THERMAL	SHOCK (-	55°C TO +12	.5°C)			•
S/N	Initial	After	After	After	After	After		
· .	E.S.R.	50 Cycles	150 Cycles	250 Cycles	350 Cycles	500 Cycles		·
· .	10 S-	11X 0	12 1	12 2	in a	100		
DOL	1.1	1.0	1.2	1.2	1.2	1.1		
002	1.1	1.0	1.3	1.2	1.3	1.2		
003	1.0	1.0	1.2	1.7	1.1	1.1		
not	1.0	1.0	1.1	1.0	1.0	1.0		
ap5	1.1	1.0	1.70	1.12	1.2	1.22		
ME:	1.2	1.0	1.4	1:4	1. 1.	1.4		
007	.9	1.0	1.0	.9	1.0	.0	,	
008	1.1	1.0	1.3	1.3	1.3	. 1.2		· · · · · ·
000	1.0	1.0	1.1	1.1	1.1	1.0		
010.	1.0	1.0	1.0	1.0	1.0	1.0		
011	,9	1.0	1.0	1.0	1.0	1.1		<u>.</u>
013	1.1	1.0	1.2	1.2	1.2	1.22		-
013	1.5	1.0	1.8	1.8	1.8	1.9		
014	1.3	1.0	1.3	1.3	1.3	1.3		
015	.9	1.0	1.0	1.0	1.0	1.1		
TEST DATE	2-25-17	3-7-17	3-//-77	3-24-11	4-16-17	52-17		
TEST BY	(C S C)	(a) (b)	(\$PO)	(3)	(Sign			



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TWX 910-343-6864

GENERAL DATA SHEET

ORIGINAL PAGE IS OF POOR QUALITY

· .	S.R. @ 25°C XT-1218-A		* * * * * * * * * * * * * * * * * * *	CU:	i.c. P/N <u>M83</u> ST P/N OD. NO. <u>023</u> ONO. <u>NAS8</u>		0 R	
E31 NO.		TH THERMAL	בחטכה (-	-55°C TO +1		72407		
s/N	Initial E.S.R.	After 50 Cycles	After 150 Cycles	After 250 Cycles	After 350 Cycles	After 500 Cycles		
016	1.0	1.0	1.1	1.1	1.1	1.0	:	
017	1.0	1.0	1./	1.1	1.1	1.1		
OB	1.2	1.0	1.3	1.4	1.4	1.4		
019	1.1	1.0	1.2	1.3	1.3	1.3		
020	1./	1.0	1.2	1.2	1.1	1.2	<u>.</u>	
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EST	2.25-17	3-7-17		3-24-77			 	



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TWX 910-343-6864

GENERAL DATA SHEET

ORIGINAL PAGE IS OF POOR QUALITY

Custom	er!s N	Name:	NASA				s/0 -	704-3	35622			 SI	HEET 96	· (of 18	18
TEST:					LAB :	SUPVA, 23		C.F	.C. P/	N M	83421	/01-10	90 R			, .
	Seal 1 ine Le		st).		ENGR.		1/	 ⋅	ST. P/I							
TEST NO					Q.A.	AU	ر و الم	· I	D. NO	-	236G.				-	
TEST TE					- T	_4		1	NO.		AS8-32		i			
TEST V	OLT.	N/A			7	,			IFICATIO		<u> </u>				:	
SPECIAL												•				
(Liqu	id to	Ligui	d)		/cles	-1006 · c1e)		-	MIL-	-c-834	21, P	ara. '	4.7.5		٠.	
ACCEPTANO	CE LIMIT	s:		· · · · · ·	· · ·			EQUI	PMENT U	ISED:				501	41 -	
Leak	age no	ot to	excee	d 1X10)-6 a tı	m/cc/s	ec.	Fin	e lea	k det	ector	. Du	<u>el No.</u> Pont 120B	651	No.	
•			· . · · · · · · · · · · · · · · · · · ·	•	- ,	•										
										-						
•								'		,	•				_	
					•	,										
·			1 Λ£+		Λ <i>Ε</i>	to m	\ <u> </u>		1 . A.F.		1 A.E.	.	Т.			
	Init		50 c	vcles	150	ter Cyçles	250	Cycle	350 0	ycles	500 C	ycles				
S/Ņ	1X 10	ე - 6	1X1	0-6	1X 1	0-6	111	0-6	1X10	<u>5</u> -6	111	0-6		-		
	Pass	Fail	Pass	Fail	Pass	Fail	Pass	Fail	Pass	Fail	Pass	Fail				
001	1		4		. /		.,		4		~					
002					4		4									
003											1					
004				· .												
005	1.															
006									1							
007													,			
008							·	_					<u> </u>	_		
000	-								 			/				
010			<u> </u>				 				. ,		· ·			
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011	 					 				 	 	 	 	\dashv		
012		 			-	 					- -		 -			,
013]	-	-	 	 	 			 		 			
014	 	 	 ¥		¥	 	 	-		-		 		-+-		
015 TEST	-		1	<u> </u>		1	/			I					·	
DATE	2-26	3-71	3.9	71	3-2	1-77	4-8	-77	4-21	-17	52	5-17				
TEST BY	LANCE OF THE PROPERTY OF THE P	1		<u> </u>		CRC	/c	PC	1	CRC]		(30)				



1655 - 26th Street · Santa Monica, California 90404

Phone (213) 829-3615

TWX 910-343-6864

Custome	er's N	ame:	NASA	· ·	·	s/0	- 704	+ - 3562	22		•. •	S	HEET	97	OF 188
	Seal T (Fine				÷			CUS	ST P/N			·		· · ·	
TEST NO.	· · ·			 	:	. •	·				36G -3240		1	<u> </u>	·
•	Init		Afte 50	er	Ąf	ter	Aft		Aft 350				<u> </u>		
S/N	1X1	0-6	1X 10	5-6		10-6	1X10	5- 6.	1X1	0-6	1X 1	0-6.			
	Pass	Fail	Pass	Fail	Pass	Fail	Pass		Pass	 -		Fail			
016	1				/_				1						
017	11		1				1				\ \ \		<u> </u>	···	
018		<u> </u>				 			 	-			ļ		·
019	1	-		 	<u> </u>	 	1		1	-	*	· · · · · ·			
020		l		L		<u> </u>	/			<u> </u>					
											 				
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· <u>-</u>	· ·														
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	· ·				-		<u> </u>								
						<u> </u>			· ·						
TEST	0 0	c pu	2 %	00	2 2	1-12	4 -		1/ -		5-2	600			· <u>.</u>
TEST BY	2-26	AC		- February 1	(Ca			<u>- 777</u> ?e)	7-33	30)	Ca	\hat{c}_{i}	<u>·</u>		<u>·</u>



F-634-3

TEST REPORT SUMMARY THERMAL SHOCK AIR TO AIR 500 CYCLES, -55°C to +125°C

TEST NO.	
REPORT #XT	_1218_R

PAGE 98 OF 188

		8	
	CUSTOMER NASA, MARS	• • •	CENTER
	CUSTOMER P/N		
LOT SIZE 30	CUSTOMER P/O NAS8-3	2403	· · ·
	C.R.C. S/O	622	
DATE COMPLETED July 1, 1977		1	
TEST	REQUIREMENT	METHOD PARAGRAPH	ACC REJ
			30
Insulation Resistance .	3.11	4.7.7	0
Capacitance	N/A	4.7.8	30 0
Dissipation Factor	3.13	4.7.9	30 0
E.S.R.			30 0
Seal Test	3.9	4.7.5	27 3

ORDER # DATE SHIPPED OTY SHIPPED INVOICE # OTY STOCKED



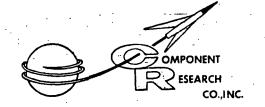
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TWX 910-343-6864

Custon	ner's Name:	NASA		s/0 - 70	14-31	5622		HEET 99	OF.	188
TEST:	or o name.	10/3//	LAB SUPVRA				B3421/01-1		<u> </u>	, .
1 .	sulation R		ENGR.	 			3) 7 21/01-1	1/ 7 K		·
	erminal to					r. P/N D. NO. 0	237G			
	XT-1218-	В	Q.A.				458-32403	<u> </u>		
	MP. 25°C		_	L		ICATION:	430-72407	````		
SPECIAL P	DLT. 30 VD	<u>C</u>	<u> </u>	· · · · · · · · · · · · · · · · · · ·	3F E C 17	TCATION,			•	
	Thermal	Shock (Air	to Air) pe	r	MII	c-83421.	Para. 4.7	7		
	006, 500 Cy							• .		
(1 hr	. per cycl	e)					4.2		-	
ACCEPTANC	E LIMITS:				ÉONIDI	MENT USED:		Model No.	FCN	No.
30pA m	aximum or	3.000.000 m	egohms min	imum	D.C.	Micro V.	ammeter -		148	
	500 thermal					Test rac		CRC None	64	
	ished limit	s for maxi	mum leakage	-			meter - Si	•	135	7
curren	t @ 25°C.	•	•		Batt	ery pack	•	N/A	٠.	
ĺ								. ,		
		•							•	
				•						
,	INSULATIO	N RESISTANO	e with the	PMAI SHO	nck	/_EE°C	to +125°C			
	Initial	After	After	After		After	After		ı	•
S/N	I.R.	20	140	260		380	500	. ,	ļ	
		Cycles	Cycles	Cycle	es	Cycles	Cycles			
022	2	10	5	6		5	7			
023	20	7.	5	B		5	6			
024	4	: 4	· 5	8		4	6			
025	4	. 4	5	1.1	1.	62	7			
	2	4	4			6	11		· ·	
026	12	. 8	3	8			7		 	
037	12	· · · · ·			-	<u>5</u>	7		<u> </u>	
038	2	5	5	6		4		<u> </u>	 	
029	2	4	<u>5</u>	8		_5	6	· ·	-	
030.	140	3	5	7		9	10		ļ	· ·
032	4	6	5	7	<u>.</u>	4'	4			
033	2	5	4	7		4	.5			
034	· &	3	3	4		4	.6			
035	2	.5	6	3		7	7			
036	4	5	4	6		5	5			
031	2	٠, ٦	5	9	•	4	5			
TEST. D'ATE	2-24-77	3-11-11	5-4-17	5.27.	nor	6 14-77	6-29-17			
TEST	CAC)		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			2-17-11 (2)			<u> </u>	
BY	2×2'0'	(F).	<~?'\	(^۲ مجم) ا	' 1	Cor	(C)			



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EST	lation Dari		······································	- 704-35622		3421/01-117	HEET 100 (
	÷	stance @ 25	ָבָייני.		T P/N		<u> </u>	
(Tern	ninal to Te	rminal)			D. NO. 0	237G	•	
EST NO.	XT-1218-B				NO. N	AS8-32403		
·	INSULATIO	N RESISTANC	E WITH THE	RMAL SHOCK	(~ 55°C	to +125°C)	• .	
s/N	Initial	After	After 140	After	After	After		
	I.R.	20 Cycles	Cycles	260 ⁻ Cycles		500 ' Cycles		
03B	16	3	4	7	4	eļ.		
039	6	12	8	8	7	12		
040	3	4	. 4	9	. 4	8		
241	4	5	5	4	7	31	-	
742	10	3	6	5	. 4	7		
043	2	6	7	6	3	6		
244	2	4	5	6	4	2		
745	2	3	6	В	5	3 .		
246	4	10	9	B	7	4		
247	2	4	6	8	4	2		
248	<i>3 4</i>	૭	6	8	3	3		
049	2	5	6	6	4.	2		
050	4	5	6	8	4	4	;	
05/	6	5	5	9	5	4		
252	2	4	4	9	_2	. 4		
				•		,		
			٠.					
								• •
				•				
	·							
EST	2-24-71	3-11-77	5.4-77	5-21-77	6-14-77	6-29-17	,	
EST	/SACI	CRC	CRO		<u> </u>	190		



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Custo	mer's Name:	: NASA		0 - 704	-35622		HEET 101	OF 188	
TEST: Insulation Resistance			LAB SUPVACA	7	C.R.C. P/N M	83421/01-11	74 R	, ,	
(Terminal to Terminal)			ENGR.	V	CUST, P/N				
TEST NO. XT-1218-B			Q.A		PROD. NO. 0237G P/O NO. NAS8-32403				
SPECIAL N	IOTES:								
	l Thermal S to Air) 50	hock per TI	P-1006	MIL-C-83421, Para. 4.7.7					
		l hr. per	cycle						
ACCEPTANC	E LIMITS:			EQUIPMENT USED:		Model No.	ECN No		
There	are no est	ablished li	mits for		D.C. Micro V.				
		current @-5		1.	I.R. Test rac	·	CRC None	647	
				_	D.C. volt ohm	mete r - Si	impson 260	1357	
•		•	•	:	Temperature test - Statham SD9-1 13				
					chamber Thermometer -	. Marchall	I E_/195	1588	
			•		Battery pack		N/A	1200	
					baccory pook		.,,		
	 								
	INSULATION RESISTANCE WITH THERMAL SH								
S/N	Initial	After 20	After 140	Afte 260		After		'	
	I.R.	Cycles	Cycles			500 Cycles		ľ	
<u>. </u>		0,0.03		0,01	es tycres	Cycles			
022	26	15	20	25	21	25			
023	25	15	20	25	35	75	·	ļ. <u>.</u>	
Ost	24	14	20	21	21	25			
025	20	/3	28	25	20	24		·	
026	22	17	21	20	25	23			
024	20	16	21	16	18	45			
CaB	27	15	21	21	18	25	,		
C29	28	15.	21	25		,25			
030	28	. 10	34	20		.33			
032	25	12	33	35		40			
033	26	31	21	38	. 1	25			
034	20	31	21	22	24	28			
035		10.	23	23		40	,		
		/3	24	19	17	20			
036			19	20	1	21			
036	26	17				T			
031 TEST	36	/				6.201			
031	3-1-11	3-16-17	5-9-17	5-3/-	77 6-16-17	6-28-17			



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Custome	er's Name:	NASA .	s/0	- 704-3562	2	s	HEET 102	OF 188		
TEST	ulotina Doc	istance @	FF°C			3421/01-117				
	minal to T	•	-)) L	PROD. NO. 0237G						
										
TEST NO.	XT-1218-B		. :		NO. NA					
	INSULATION RESISTANCE WITH THERMAL SHOCK (-55°C to +125°C)									
S/N	Initial	After 20	After 140	After 260 -	After 380	After				
	I.R.	Cycles	Cycles	Cycles	Cycles	500 Cycles				
038	20	14	21	30	33	40				
039	22	16	17	22	33	40				
040	20	16	18	26	52	22				
04-1	21	15	23	23	32	22		,		
042	23	12	15	55	23	24				
043	20	160	22	24.	26	19				
044	20	9	24	11	20	35				
045	28	15	24	12:	/3	42				
046	27	11	24	23	13	35				
041	28	10	21	21	33	55				
048	24	1/	35	41	15	50		·		
040	27	12	34	210	13	30	<u></u>			
050	25	14	30	22	27	50				
051	24	10	33	38	16	30				
052	27	21	29	35	.33	50		· · · · · · · · · · · · · · · · · · ·		
				ļ						
						·				
TEST Date	3-1-11	3-16-77	5-9-17	5-31-11	6-16-17	6-28-11				
TEST .	Zege .	[30]	Car	Caci	Sign	(6)				



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TWX 910-343-6864

Custo	mer's Name:	NASA	S	/ <i>9</i> c=7,04-3	35622	Sł	HEET 103	of 188
TEST:	•	·	LAB SUPVR.	7 23 1	C.R.C. P/N			
1 .	sulation Re minal to T		ENGR.		CUST. P/N			
	. XT-1218-B		Q.A.		PROD. NO	0237G		
TEST TE	 		4		P/O NO			
	DLT. 18 VD		1	<u> </u>	SPECIFICATION:	·		
SPECIAL						•		
(Air	to Air) 5	Shock per T 00 Cycles 1 hr. per			MIL-C-8342	21, Para. 4.	7.7	
ACCEPTANO	E LIMITS:				EQUIPMENT USED:	·	adal Na	ECN No.
After there	500 cycles are no est	or 12,000 m air to air ablished li @ +125°C.	thermal sl	hock aximum	D.C. Micro V I.R. test rad D.C. volt ohn Temperature t	Ammeter - H ck CRC n meter - Si	None mpson 260	1480 647 1357 130
		•		ŀ	chamber Thermometer - Battery pack		E-485 N/A	1588
<u> </u>	INSULATIO	ON RESISTAN	CE WITH THE	ERMAL SH	OCK (-55°C	to +125°C)		
S/N	Initial	After	After	After	After	After		
	I.R.	20 .	140	260	380	500		
		Cycles	Cycles	Cycle	s Cycles	Cycles		
022	240	170	180	330	150	245		
023	420	330	570	550	900	270	·	
024	150	130	230	1650	0 11,500	10,000		
025	440	260	250	140	1 /	280		
026	210	150	190	150	. 1	250		
0211	430	180	110	350	i .	200		
028		320	235	210		140		
029	l .	100	370	320		300	,	
030		130	390	250		200		٠.
032	350	740	180	410		210		
033		200	410	560	1 _	400		
034		270	420	350		580		
035		230	370	390		270		
036	420	300	270	320		300		
1	250	230	310	420	520	95		
O31 TEST DATE	3-2-77	3-14-77	5-6-77	531-7		6-28-17		
TEST BY		(Pr)	(Sa)			(3)		
		- (- Cap -)	الكرمية (/	(36)			<u> </u>	



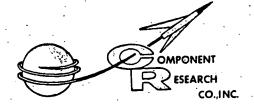
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GENERAL DATA SHEET

ORIGINAL PAGE IS OF POOR QUALITY

	ner's Name:	NASA	s/0	- 704-35622	2		HEET 104	OF 188
	ulation Res minal to T	istance @ erminal)	25°C	cus	.C. P/N M83 ST P/N DD. NO. 023		4 R	
TEST NO.	XT-1218-B	· · · · · · · · · · · · · · · · · · ·	:			8-32403		
•	INSULATIO	N RESISTANO	E WITH THE	RMAL SHOCK	(- 55°C t	o +125°C)		
S/N	Initial i.R.	After 20 Cycles	After 140 Cycles	After 260 Cycles	After 380 Cycles	After 500 . Cycles		
038	250	150	230	530	260	200		
039	250	160	340	440	410	300	,	
040	530	110	330	1300	410	370		·
04,	440	150	1500	450	4400	780		
042	960	680	230	2750	310	350		
043	740	130	1750	490	450	650		
044	170	280	420	360	330	265		
045	300	360	460	620	350	215	<u> </u>	
046	200	120	480	310	420	280		
047	410	150	390	200	390	115		
648	180	120	185	350	270	130		
049	910	120	2625	400	350	195		
050	380	69	520	560	400	140		· ·
051	600	230	490	565	580	590		
052	120	129	540	290	540	330		ļ
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		<u> </u>		ļ <u>.</u>				<u> </u>
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			_					
			·					<u> </u>
								
75.07			<u> </u>					
DATE	3-2-7	3-14-17	5-6-17	5-3/-77	6-11-17	6-28-17	ļ	ļ
TEST By		(See	(3)	(35)		[[m. 8].		1



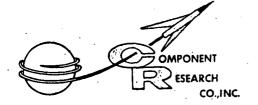
Phone (213) 829-3615

TWX 910-343-6864

GENERAL DATA SHEET

ORIGINAL PAGE IS OF POOR QUALITY

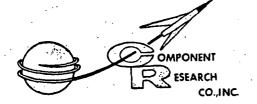
Custo	omer's Name	: NASA	· · · •		4-35	622	SI	HEET 105	OF 188	
теят: Сара	acitance Dr	ift with	LAB SUPVE		C.R	.c. P/N M8	3421/01-117	74 R	t	
The	rmal Shock		ENGR.	1/.	CUS	ST. P/N			-!	
TEST NO	. XT-1218-	B	Q.A.	2/	PRO	D. NO <u>. 02</u>	37G			
TEST TE	0500	-: :-				NO. NA	s8-32403	1		
TEST VO					SPEC	IFICATION:				
SPECIAL						u o 0alo1				
Norma	l Thermal S	hock per Ti	P-1006	,	MIL-C-83421, Para. 4.7.8					
	to Air) 50									
- 55°C	to +125°C,	l hr. per	cycle							
ACCEPTANO	E LIMITS:		•.		EQUI	PMENT USED:		adal Na	ECN No	
1255	to .165uF		•	· ·	l·mo	edance com	m parator - G	odel No.	ECN No. 1331	
	500 cycles		thermal sl	hock		cision dec		i.R. 1413	1387	
	are no esta					acitor	, -			
drift	limits for	this test	condition.		·	•	•			
ĺ				•	,		•			
		·-·-	······································							
	PERCENT C	APAC I TANCE	CHANGE WIT					(c)	,	
S/N	Initial	After	After	Afte		After	After			
	Cap. In	20	140	260		380 Cycles	500 Cycles			
	uF	Cycles	Cycles	Cycl		Cycles	Cycles			
033	.099916	4.025	1.025	+.115	•	+195	+22			
023	.099587	1.055	+08	7.145		1.085	1.21			
024	.100275	1.055	7.065	1.000	5	1.11	1.085			
025	100015	1.02.5	1.025	+100	<u>.</u>	1.135	+145			
026	.099946	4.05	1.055	+,12	5	7.14	+.165	· · · · · · · · · · · · · · · · · · ·		
021	100468	+1.0	+1.0	+1.0	5	+1.1	+1.2	•		
	10013R	+.045	1.015	1.02.		t.025	+015	·		
039	100589	1.045	+.065	1.165	5	+275	434			
050	100225	1.05	t.06	+25		t.36	4.45			
03.7	.099683	1.04	+.055	+.18:	5_	+.275	7.3	<u> </u>		
433	199913	1.035	1.045	+15	<u>5</u>	7.16	1.195			
034	101238	1.055	1.095	1.213		1.28	7.3.3	·	-	
035	09490	4.045	+045	+150		+205	4.19 .			
036	100181	4.06	+.075	1.165		1.185	+.19			
031	099400	+055	1.045	1.09.5		t.08	1.08			
TEST DATE	2-24-17	3-11-11	5-3-17	5-27-	27	6-14-11	6-29-11			
TEST BY	CRO	^	CSA	Carr		(Ge)	, , , ,			
	Vi -	Con Con	(F) ·	100 m		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Con Ex,		L	



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TWX 910-343-6864

Custo	mer's Name:	NASA	\$/0	- 704-3562	2	S	HEET 106	OF 188
	itance Drif	t with Ther	mal Shock	L		3421/01-11	74 R	
@ 25°	C	. ·		,	ST P/N OD. NO. ⁰²	37G	 .	
TEST NO.	XT-1218-B		· :		· · · · · · · · · · · · · · · · · · ·	s8-32403	1	
	PERCENT C	APAC I TANCE	CHANGE WIT	H THERMAL	SHOCK (-5	5°C to +12	5°C)	
S/N	Initial Cap. In	After 20	After	After	After	After 500		
	UF	20 Cycles	140 Cycles	260 Cycles	380 Cycles	500 Cycles		· · · · · · · · · · · · · · · · · · ·
038	.099178	t.185	1.095	+135	-125	-48		
0.39	097960	+.225	+.185	1.235	/	-175	· -	
040	091518	1245	+.125	+.15	+145	t.085		
041	.101335	t.125	+.195	1.02	+8.4	+6.3		
042	.098381	<i>t.115</i>	+ 155	+155	+.21	1.22	:	
043	.097807	+125	t.21	1.26	4.35	+.B		
044	.097164	t.115	+./	<i>‡.</i> /	+.16	4.115		
045	.097401	+105	1.105	1.09	+.14	1.09		
046	099381	t.17	+.205	وق بر	4.44	1.4		
049	091971	+.19	1.06	7.095	4.44	-03		
C48	.098476	1.26	+.12	+175	+.195	7.21		
049	108758	+.185	1.09	1.105	t.12	+135		
050	.091840	1.125	+.05	1.035	+.21	085		
051	.091999	+ 175	4.05	+.14	7.21	4.205		
052	.098500	4.145	1.045	4.125	t.26	7.19		
		L						
					·			
			,					. `
								<u>-</u> .
			•					·
							-	
		,						•
TEST Date	3-1-17	3-16-77	54.77	5-31-77	6-17-77	6-27-17		
TEST BY		(2)		13	1703		 	

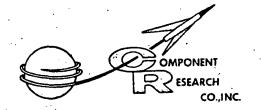


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TWX 910-343-6864

Custo	mer's Name:	NASA .	S/	'0 - 704	-35622	S	HEET 107	OF 188
TEST:			LAB SUBUR		C.R.C. P/N M			, .
	itance Drii	ft with	ENGR.		CUST. P/N		<u> </u>	
	al Shock XT-1218-E		1 3/3	<u>/</u>	PROD. NO. O	237G		
TEST TE		3	0.4.		P/O NO. N		1.	
	olt. N/A			· 1-	SPECIFICATION:	100 72 107		
SPECIAL N					MII C 82/12	l, Para. 4.	7 Q	
	1 Thermal S to Air) 50	Shock per T OO Cycles	P-1006		M(L-C-0)42	i, rara. 4.	7.0	
-55°C	to +125°C	, 1 hr. per	cycle					
ACCEPTANC	E LIMITS:		 		EQUIPMENT USED:			
		ablished in s for this			Impedance com Precision dec	parator - G	lodel No. I.R. 1654 I.R. 1413	ECN No. 1331 1387
	•			1	capacitor		+b cpo 1	120
					Temp. test ch Thermometer –			130 1580
	•)	<i>,</i> .		٠,	
· ·								
	PERCENT	CAPACITANCE	CHANGE WIT	TH. THERM	AL SHOCK	(-55°C to +	·125°C)	
S/N	Initial	After	After	After		After		
	Cap. In	20	140	260	380	500		
	uF	Cycles	Cycles	Cycle	s Cycles	Cycles		
023	-098860	1085	1.06	+23	1.28	t.28		
023	098900	+135	1.135	t.24	+.23	-18		
024	.098513	1.105	T.105	t. 16	+.12	1.085	<u> </u>	
025	.098628	t.085	1.055	t. 2	×.225	1.18		
036	.098495	113	1.105	t. 2	7.24	1.22		
027	100051	1055	1.065	+115	1.24	-165		<u> </u>
028	.098675	T.115	1.05	+.12	T.125	+045		
1	-	+.155	1.16	1.3	7.30	1.4		
	.098834.	+.11	t.085	T. 165		0.00		
	098211	1.04.5	-025	1.02	1	18	·	
	.098564		<i>†.145</i>	1.24		i .		
1 . / 1	.099.898	1.135	t. 19	7.31	t.3.6	4.34		-
	.098159	1.055	<i>t.</i> //	1.22		1.28		
	.098B34	t.125	+.17	1.26	1.26	1:2		
037	.098019	+155	1.14	7.17	+.135	+07	 	
TEST	2 4 -			ļ '				
DATE TEST	3-1-77	3-16-17	5 <u>9-11</u>	5-31-7		6-27-77	 	
BY	Car.	Cac	(AC)		200	<u> </u>	<u> </u>	

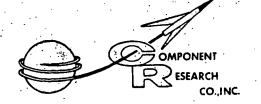


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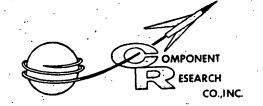
Custon	ner's Name:	NASA	s/0	- 704-35	622	*. * <u>.</u>	S	неет 10	8 of 1	88
TEST	acitance Dr	if+ @ _55°r	with	. 1	C.R	.C. P/N	M83421/01-1	174 R		, .
	mal Shock		WILII			T P/N			<u> </u>	
mer	Illa I STIOCK	<u></u>	· ·	·	PR0	D. NO	0237G			
TÉST NO.	XT-1218	-B	: 		P/0	NO	NAS8-32403	<u> </u>		
		APACITANCE	CHANGE WIT	H THERMA	L S	носк (-55°C to +1	25°C)		
S/N	Initial	After 20	After 140	After 260		After 380	After			
	Cap. In uF	Cycles	Cycles	Cycle		Cycles	500 Cycles			
038	.100939	-005	05	-04	<u></u>	1.045	,			
•	.099714		-035	+.00		+.01	-06			
,	.099272	1	+07	-05		-05	-,/35			
٠,	-103088		t.23	+51		+6.5	+5.5	,		·
04.3	100000	-09	-045	1.02.	1	+.09	1.025			
043	099659	+010	-03	+.02	5	103	-06			
044	096795	7005	-04	-015	5	-025	7.08			
	-099121	-015	7.05	-04	5	7055	-125	•		· - · · · ·
046	100998	+.005	+015	1.09		1.065	+ 055			
047	.09516	0.00	7.03	7.31		+.45	1.015			
048	100223	005	-015	+.01		+.015	-005			
049	100321	-015	-02	-01	5	-03	7/05			
050	099493	-04	7045	+,21		+.17	7065		<u>. </u>	
	09565	,	1.005	+.02	5	4.01	706			
052	100169	-135	t.015	+.11		+.095	1.05			
-						,				
<u></u>						,	·			
		•			•					
		•								
	•		,			•				
		• .								
TEST DATE	3-2-77	3-15-77	5.5-77	5-31-7	17	6-16-11	6-25-71	. •		
TEST BY	(30)	(\$e)	CAR			<u> </u>	() () () () () () () () () ()			



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TWX 910-343-6864

Custon	mer's Name:	NASA		40 - 704	4-35	622	SI	HEET 109	OF 188
TEST:		· :	LAB SUPVEL		C B	C P/N M8	3421/01-117	4 R	· · ·
	citance Dri	ft with	ENGR.	7/			<u> </u>	7 10	
	nal Shock	<u> </u>				T. P/N	270	·	
	. XT-1218-	В	Q.A. Q	1	i		37G 58-32403		
	MP. 125°C	· 					50-32403	<u> </u>	
	DLT. N/A				SPECI	FICATION:	•	•	•
1	NOTES:	1 - 1 T	1006		١ ,	c 02/:21	Dawa 1: 7	, Ω	
	to Air) 5	hock per TF	-1006		_ M	116-6-03421	, Para. 4.7	0	
		1 hr. per	cvcle	•		. •	•		
	E LIMITS:				FOULD	MENT USED:		1	
		•		·	`		•	odel No.	ECN No.
		ablished in					parator - G		1331
cap. c	irift limit	s for this	test condit	tion.			ide G	.R. 1413	1387
1		•				acitor	mber - Sta	+ham 500_1	130
ľ		•					mber - Sta Marshall J		1588
					"	,omccci		0,	. ,
			-				.•	,	
	•	•					,		,
	PERCENT C	APAC I TANCE	CHANGE WIT	H THERM	AL S	HOCK (-5	5°C to +125	°C)	· .
S/N	Initial	After	After	Afte		After	After		
	Cap. In	20	140	260		380	500		•
	uF	Cycles	Cycles	Cycle	es	Cycles	Cycles		
022	.099915	1.005	-005	+01	, .	1.075	+035		
023	.100670	-01	-005	+.02		1.075	02		
024	100262	1.01	-01	-01		-015	-11		
035	.100317	-005	-01	2.00		1.02	-085		
	100174	+.005	-03	-01	7	+.025	-04	·	
021	101819	-005	-015	+.00-	<u>, </u>	t.065	-01		
028		-035	7.06°	7.06	Ī	-08	-18		
029	100965	-065	t.C1	1.09.	i	1.165	+105		
030	100317	-09	020	4.31	i i	+37 ·	+ 115		
032	000800	1.005	+.005	+31		+ /	7025		•
1223	100261	t.C/	-035	0.00		1.015	-085		
034	101567	1.015	-005	1.08		7.16	1.095		
035	.090971	7.01	-03	1.04	ı	t.04	+.025		
036	100487	-01	-045	0.00		4.015	-09		
037	.009.580	-005	-025	t.01		t.015	707		
TEST /	3-2-11	3-15-77	5-6-11	5-3/-	-77	6-16-17	6.28-17		
TEST BY		/ / .	(P)	(F)	•	(COC)	(30)		
	CAT	CRO		<u> </u>				<u></u>	

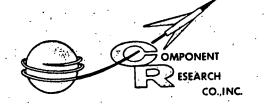


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Custon	mer's Name:	NASA	\$/0	- 704-35	622			HEET 110 (OF 188
TEST Car	pacitance D	rift @ +125	°C with		C.R	.c. P/NM8	3421/01-117	74R	
	ermal Shock					T P/N	··		
		· ·	·				37G	·	
TEST NO.	XT-1218-	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					88-32403		
		· · · · · · · · · · · · · · · · · · ·	CHANGE WITH					(C)	
S/N	Initial Cap. In	After 20	After 140	After 260	-	After 380	After , 500		
	uF	Cycles	Cycles	Cycle	s	Cycles	Cycles	<u> </u>	
038	.100673		t.045	4.09		1.075	+.105		
039	.099475	1.065	+.06	4.13	<u>.</u>	7.15	+.195		
040	.099021	+.065	1.035	t.OB		+.055	4.045		
041	102847	+0+	+,195	1.33		+22	15.9		
042	,099780	+.045	+.015	+.08	5	+,11	+ .125		
c43	.009221	1:05	4,055	1.15	5	T.195	+.225		
044	098589	t.055	+.03	+.00	3	· _ :	1.095		
045	.098850	1.055	+,05	1.09	3	1.065	+065		
046	100692	1.055	1.085	1.23	5	7-3	1.34		
041	.099388	1.055	+.03	+.14	>	+235	+3		
048	.099847	+.045	1.045	+10	5	1:085	+.195	·.	
:049	100132	1.03	4.015	4.00	. س	+065	+.06		
050	.09288	+.05	1.04	7.14	•	t.165	1.26		
051	09358	+,03	4.025	+.08		l i	+.12		
	00860	t.025	1.025	+.19	.	t. 195	+265		
				′					
									• .
							•		
	,		•						
					٠				-
·			 	·					
•	-						. • .		
	·	-							
TEST	2/25/00	3/11/27	5/5/11	Spuln	7	6/14/21	6/20/17		
TEST								· ·	· · · · · · · · · · · · · · · · · · ·



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Custo	mer's Name:	NASA	چ	<u> </u>	-35622	Si Si	HEET !!!	OF 188		
TEST:	· · · · · · · · · · · · · · · · · · ·		LAB SUPVA		C.R.C. P/NM	83421/01-1·1		011100		
Dissi	pation Fact	or @ lKHz	ENGR.	~	CUST. P/N					
TEST NO	xT-1218-	В	Q.A.	/ /		237G				
	EMP. 25°C		- W	F	P/O NO. N	AS8-32403	ì			
	OLT. N/A		1	SF	PECIFICATION:					
SPECIAL	NOTES:				=					
(Air	l Thermal S to Air) 50 C to +125°C	0 Cycles			M1L-C-83421, Para. 4.7.9					
ACCEPTAN	CE LIMITS:	***	-	, E(QUIPMENT USED:		odel No.	ECN No.		
there	500 cycles are no est test condit	ablished %		s for P	mpedance comprecision decapacitor	parator - G		1331 1387		
	•						•			
					· .'	,	,			
	PERCENT DI	SSIPATION	ACTOR WITH	THERMAL	SHOCK (-55	°C to +125°	°C)			
S/N	Initial	After	After	After		After .				
	D.F.	20 Cycles	140 Cycles	260 Cycles	1	500 Cycles				
022	1	075	.075	085		1075	<u> </u>	<u> </u>		
023	.06	.075	.075	.075		.075	·			
034	.06	08	075	.085	i	.075				
025	.06	.075	.075	.08	.085	.08				
026	.06	.015	10/5	.08	.CB	.08	·			
027	.06	.085	.075	.08	.085	.015				
028	.07	.085	.075	.09	.095	.695				
039	.06	108	.075	.075	.08	.08				
030 032 033 034	.08	.075	075	OB	.08	.075				
033	.09	.08	015	.07	.095	.075		<u> </u>		
021	.09	075	.015	075	.08	.08		_		
035	.08	.075	.000	.015	, OF	.095				
035		015	,065	.073	.075	.065				
036	.09	.015	.07	0/0	1003	.075				
037 TEST	.06	.075	.075	.085		OB				
DATE	2-24-71	3-11-17	5-5-77	5.27-99	7 6-14-77	6-20-17	<u> </u>			
TEST By	Coci	CRU	CAC	Cac	(SPC)	Coc)	<u>.</u> .			



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Dis	sipation F	actor @ IKH	z @ 25°C	cus	ST P/N DD. NO. 02	3421/01-117 37G	74R	
EST NO.	XT-1218-	В	: 	P/C	NONAS	8-32403	1:	
					SHOCK (-5		s°c)	· · · · · · · · · · · · · · · · · · ·
S/N	Initial D.F.	After 20	After 140	After 260	After 380	After 500	. •	
		Cycles	Cycles	Cycles	Cycles	Cycles		
038	.09	.08	.075	.08	.085	.075	·	
039	.08	.075	.01	.08	.085	.015		
040	.09	.08	075	.08	.085	.08	•	
041	.09	.095	-07	.07	.08	.075		·
042	.08	:075	.01	101	.075	.075	,	
943	.08	.075	.065	.065	.075	.015		
044	.09	.075	1075	.015	.085	.08		
245	.09	.075	015	.015	.085	.085		
7460	.09	.015	1075	1075	.085	.085		
047	.09	.075	.075	.015	.095	.075		
748	.09	0/5	.07	.07	.075	.015		
240	.09	.08	.015	00.5	,085	.085		
250	.09	1075	.075	.075	.08	.075		
05/	.09	.015	.67	.01	.08	.005	•	
252	.08	.075	.065	.065	.015	.075		
		-			. /			
	•							
	·				•			
				·			-	
								
	"							
EST	2.25-77	3-7/-77	5:5-77	5:27-77	6-14-77	6-29-71		
EST	(SP)	(FE)	(A)	(%)	(Sep)	6		



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Custon	mer's Name:	NASA	S CERT	/0 - 70	4-356	22	S	HEET 113	OF 188	
TEST:		· -	LAB SUPYR		C.R.C	. P/N	M83421/01-1			
Dissi	ipation Fac	tor @ IKHz	ENGR.	1/	ł	. P/N				
TEST NO	XT-1218	 -B	9.4.	1			0237G			
TEST TE	мр55°C		- Ju	<u> </u>	P/0 I	NO	NAS8-32403	ŧ		
TEST V	OLT. N/A				SPECIF	ICATION:			· · ·	
SPECIAL I					1					
	of Thermal to Air)	Shock per T	P-1006		_MI	L-C-83421	, Para. 4.	7.9		
		, 1 hr. per	cycle		· .		,			
ACCEPTANC	E LIMITS:				EQUIPM	ENT USED:				
There	are no est	ablished %	D.F. limit	s for	Imne	dance com	۱) - parator	Model No.	ECN No. 1331	
	test condit		· · · · · · · · · · · · · · · · · · ·	3 .0.		ision dec		G.R. 1413	1387	
ŀ			•.		capacitor					
		•	•				amber Stath Marshall		130 1588	
						momo ce i	, ilu jana i i	, L 707	1,700	
	•					,		,		
	·			· · · · · · · · · · · · · · · · · · ·						
	PERCENT D	ISSIPATION	FACTOR WIT	H THERM	AL SH	OCK (-5	5°C to +125	s°c)	-	
S/N	initial	After	After	Afte		After	After			
	D.F.	20 Cycles	140 Cycles	260 Cycle		380 Cycles	500 Cycles			
	1				- -					
032	. 36	.35	.36	36		.42	35	ļ ·		
023	.35	.34	136	.42		<u>.उट</u> ा	142			
024	.36	36	136	.37		.36 2-	.36		<u> </u>	
025	.36	.35	.36	36		.35	.36	 		
026	.36	1.36	136	136		·36	.36			
027	<u>-36</u>	.35	136	136		<u>.35 </u>	.42	<u> </u>		
038	.37	.36	-36	37		.36	137	!		
029	<u> </u>	.35	,35	36		.42	,35			
031)	.35	.34	.36	.40		.46	. efet			
032	-36	.36	.44	.51		.47	.45		 	
033		·38	.36	.36	-+	<u>, ७७</u>	. 44	 		
034		.34	.34	135		.34	.34	 		
035	.34	.34	·34	.34		.36	.37		 	
031	l .	.35	135	.36		.36 -36	.42	 	 	
C37	_36_	.38	.36	-36	-+	.54	.39			
DATE	3-1-77	3-16-77	5-9-17	చ్చ/-7	7 6	-17-77	6.27-71		<u></u>	
TEST				CA EN			CRO			



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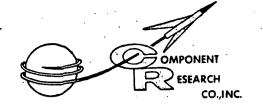
Dissipation Factor @ IKHz @ -55°C Dissipation Factor @ IKHz @ -55°C TEST MO. XT-1218-B PERCENT DISSIPATION FACTOR WITH THERMAL SHOCK (-55°C to +125°C) S/N Initial After After After After After 260 380 500 Cycles Cy	Custome	er's Name:	NASA	\$/0	- 704-3562	2 .		SHEET 114	OF 188			
Dissipation Factor @ IKHz @ -55°C	TEST	 ;-	······································		. C.F	R.C. P/N M8			, .			
PROD. NO. 02376 PROD. 02376 PROD. 02376	Dissip	ation Fact	or @ IKHz @	-55°C								
PRO NO. NASB-32403 PRO NO. NASB-32403 NASB-3240	<u> </u>		,	·								
S/N Initial After 20	TEST NO.	XT-1218	-В					l				
0.F. 20 140 260 380 590 Cycles Cyc		PERCENT	DISSIPATIO	N FACTOR W	ITH THERMA							
Cycles Cycles Cycles Cycles Cycles 136	S/N											
839 .36 .35 .36 .36 .44 .55 C40 .36 .35 .36 .37 .37 .48 041 .36 .43 .52 .5 .45 .36 042 .34 .35 .34 .35 .34 .34 C43 .34 .35 .34 .35 .34 .35 C44 .36 .43 .35 .36 .35 .37 C45 .36 .36 .35 .36 .35 .37 C46 .35 .36 .35 .36 .35 .36 C47 .36 .36 .36 .36 .35 .36 C49 .36 .36 .36 .35 .35 .45 C49 .36 .36 .36 .36 .37 .36 C50 .36 .36 .36 .36 .36 .37 .36 C50 .36 .36 .37 .36 .37 .36 C50 .36 .37 .35 .36 .5 .45 C52 .36 .37 .35 .37 .35 .36 .37 .36 C53 .36 .37 .35 .37 .35 .36 .37 .36	,	D.F.										
839 .36 .35 .36 .36 .44 .55 C40 .36 .35 .36 .37 .37 .48 041 .36 .43 .52 .5 .45 .36 042 .34 .35 .34 .35 .34 .34 C43 .34 .35 .34 .35 .34 .35 C44 .36 .43 .35 .36 .35 .37 C45 .36 .36 .35 .36 .35 .37 C46 .35 .36 .35 .36 .35 .36 C47 .36 .36 .36 .36 .35 .36 C49 .36 .36 .36 .35 .35 .45 C49 .36 .36 .36 .36 .37 .36 C50 .36 .36 .36 .36 .36 .37 .36 C50 .36 .36 .37 .36 .37 .36 C50 .36 .37 .35 .36 .5 .45 C52 .36 .37 .35 .37 .35 .36 .37 .36 C53 .36 .37 .35 .37 .35 .36 .37 .36	NB	-36	,36	.36	.37	.44	.41	·				
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			1	<u>'</u> '	1 '		i					
041				i '	I .	ŀ	1 .					
042 .34 .34 .35 .34 .35 .34 .35 .34 .34 044 .36 .43 .35 .36 .35 .36 .37 .36 045 .36 .38 .35 .36 .36 .36 .36 .36 .34 .35 046 .35 .36 .36 .36 .34 .35 .45 048 .35 .34 .35 .35 .45 .36 049 .36 .36 .36 .36 .37 .36 050 .36 .34 .39 .51 .51 .46 051 .35 .31 .35 .36 .36 .36 .36 052 .35 .31 .35 .36 .5 .36 052 .35 .32 .35 .37 .35 .36 052 .35 .31 .35 .37 .35 .36 052 .35 .35 .37 .35 .36 .37 .3						1 '						
C43 .34 .35 .34 .35 .30 .34 .35 .30 .34 .35 .30 .35 .30 .35 .30 .36 .36 .36 .36 .36 .36 .36 .36 .36 .36		· .	1	i	,35	1	1		_			
044 .36 .43 .35 .36 .35 .37 045 .36 .38 .35 .36 .36 .36 046 .35 .36 .35 .36 .34 .35 049 .36 .36 .36 .35 .35 .45 049 .36 .36 .36 .36 .36 .37 .36 049 .36 .36 .36 .36 .37 .36 050 .36 .34 .39 .51 .51 .46 051 .35 .31 .35 .36 .5 .36 052 .35 .31 .35 .36 .5 .36 052 .35 .31 .35 .36 .5 .36 052 .35 .37 .35 .37 .35 .36		· '		_	,	1						
0+6 .36 .38 .35 .36 .36 .36 0+6 .35 .36 .35 .36 .34 .35 0+9 .36 .36 .36 .35 .35 .45 0+9 .36 .36 .36 .36 .36 .37 .36 050 .36 .34 .39 .51 .51 .46 051 .35 .31 .35 .36 .36 .5 .36 052 .35 .37 .35 .37 .35 052 .35 .37 .35 .37			1	. —	į.	1	1					
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049 .36 .36 .36 .37 .36 050 .36 .37 .36 050 .36 .34 .39 .51 .51 .46 051 .35 .31 .35 .36 .5 .36 052 .35 .37 .37 .37 .37 .37 .37 .37 .37 .37 .37	- 1	· ·	1 ' 2	·	l	1 .	i '					
050 .36 .34 .39 .51 .51 .46 051 .35 .31 .35 .36 .5 .36 052 .35 .32 .35 .37 .35 .36 TEST DATE 3-1-77 3-16-77 5-9-77 5-31-77 6-27-77					1	-	,36					
05/ .35 .3/ .3/ .35 .3/ .35 .3/ .35 .3/ .35 .3/ .35 .3/ .35 .3/ .35 .3/ .35 .3/ .35 .3/ .35 .3/ .35 .3/ .35 .3/ .35 .3/ .35 .3/ .35 .3/ .35 .3/ .35 .3/ .37 .3/ .3/ .3/ .3/ .3/ .3/ .3/ .3/ .3/ .3/		.36	.34		.51	1	.46					
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TEST 3-1-77 3-1(3-71 59-17 5-3-17 6-17-17 6-27-77		.35	.32	.35	:37	. 35	l i					
DATE 3-1-77 3-16-77 59-77 5-31-77 6-17-77 6-27-77								<u></u>	_			
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DATE 3-1-77 3-16-77 59-77 5-31-77 6-17-77 6-27-77												
		3-1-77	3-112-77	59.17	5:31-77	6-17-21	6.27.77					
BY CRC CRC CRC CRC	TEST	CHC	~ / /		~	(A)	(30)					



Phone (21.3) 829-361.5

TWX 910-343-6864

	Factor @ IKHz			Τ		WOOL = 1 /=		2/. p'	
			~	C.R	I.C. P/N	M83421/0	1-117	/4 K	
		ENGR	V.		ST. P/N		· ——		<u></u> .
TEST NO. XT-12		Q.A.	(Z)		D. NO		<u></u>	····	<u>-</u>
	125°C				<u></u>	NAS8-324	03		
TEST VOLT. N	/A			SPEC	IFICATION:			•	
Normal Therma	1 Shock per T	P-1006			MIL-C-83	Joli Dan	- 1 ₆	7 0	
(Air to Air)		•	:	-	WIT-C-02	4ZI, Fai	a. +	. / • 3	•
1 .	°C, 1 hr. per	cycle						<u>-</u>	
ACCEPTANCE LIMITS:				EQUI	PMENT USED:		Mo	del No.	ECN No.
There are no		D.F. limit	s for	Imp	edance c	omparato	ŗ.G.	R. 1654	1331
this test con	dition.		•	1	cision de acitor	ecade	٠G.	R. 1413	1387
				Tem	p. test			tham SD9-1	130
	•	.*		The	rmometer	- Marsha	all J	E-485	1588
	•	•		,	•			• •	
}									
PERCE	NT DISSIPATIO	N FACTOR WI	TH THER	MAL	SHOCK	(-55°C t	0 +1/2	25°C)	
S/N Initia	l After	After	After		After	Aft			
D.F.	20	140	260		380	50 Cyc			•
 	Cycles	Cycles	Cycle	<u> </u>	Cycles	Lyc			
022 .02		03	.03		.035		_	<u> </u>	
023 .03	.055	.035	.03		.04	<u> </u>			
034 .02		.03	.03		.035				
025 .03	.035	.035	1.03.	_	.04			 	
0.26 .03	.035	103	103		.085	i '			
027 .03	035.	.035	.03		1035	r			
028 .033		1.04	.04		.055	_	<u> 55</u>		
029 .03	.04	.03.5	:03		100				·
030 .03	.0.35	.035	.03	•	.05		4_	-	
032 033		.03	03		.045	1	35	 	<u></u>
033 03	26	135	.03		1045		<u>65</u>	<u> </u>	
034 02		.03	03		.035			 	<u> </u>
035 .02	_	025	.05		.045		,	 	· · · · · · · · · · · · · · · · · · ·
036 .03	I	.03	.03		.04.5				-
039 .03.	5 :03	.03	23)	.06	1.04	4.5		·
DATE 13-3-7	7 3-15-77	5-6-17	5-31-1	7_	6-16-17	628	-77		
TEST CONT		(A) CA	3		(A. 18)	\$ 10 mg	<u>></u>		



Phone (213) 829-3615

TWX 910-343-6864

EST				- 704-3562 C.R	.C. P/N M83		HEET 116 +R	,
Dissip	ation Facto	or @ lKHz @	125°C	cus	T P/N D. NO. 023			
TEST NO:	XT-1218	<u>-</u> В	• :		NO. NAS		<u></u>	•
·	PERCENT	DISSIPATION	FACTOR WI			(- 55°C to +	⊦125°C)	
s/N	Initial	After 20	After 140	After 260	After	After	125 07	
	D.F.	Cycles	Cycles	Cycles.	380 Cycles	500 Cycles		
038	.025	.035	•03	.03	.04	.03		
039	1025	103	.03	1025	.035	.025	<u> </u>	
040	025	.03	.,025	103	·035	.04		
041	.03	.035	.03	.035	.125	./25		
242	.025	.035	.025	.03	.035	.035		
043	.025	.03	,025	.03	035	.03	,	
044	.025	,03J	1025	.03	035	035	· .	,
045	.035	.06	.035	.03	.04	.04.		
046	.0.3	.035	.035	1035	.045	.04		
247	.025	.03	.03	.03	.04	.025		
248	.03	035	.035	·035	.04	.035		
249	·03	.04	-03	.035	.05	./		
050	.025	.03	.03	·035	.04	.03		
051	035	.03	.03	.035	.065	,055		
252	1035	103	.03	·035	.035	.05		
			·		,			
	·							<u> </u>
	·						·	
					·			
					·			
	·							
EST	3-2:77	3-/5 77	5-5-77	5.3/-77	6-16-17	6:28-17	·	
TEST SY	CRO	Can		1	^//			



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Custor	mer's Name:	NASA	S	/0 - 704-	35622	S	HEET 117	OF 188
TEST:			LAB SUPVE	C	.R.C. P/N M83			
Diss 10 Ki	ipation Fac Iz	tor @	ENGR.		UST. P/N			
TEST NO	XT-1218-	В	Q.A.	P	ROD. NO. 023	7G		
	MP. 25°C			P	/O NO. NAS	8-32403	<u> </u>	
	DLT. N/A	J : 2	7 -	SP	ECIFICATION:			
	NOTES:						• .	
(Air	to Air)	Shock per 1 500 Cycles , 1 hr. per			_MIL-C-83421	, Para. 4.7	7.9	
	E LIMITS:			EQ	UIPMENT USED:			
	are no est est condit	ablished % ion.	D.F. limit	s for I	mpedance com recision dec apacitor	parator - G	lodel No. i.R. 1654 i.R. 1413	ECN No. 1331 1387
					•	· · · · · · · · · · · · · · · · · · ·		٠
	•				<i>,</i> •		•	•
}		•					,	
			•					•
	PERCENT D	ISSIPATION	FACTOR WIT	H THERMAL	SHOCK (-5	5°C to +1.25	s°c)	
S/N	Initial	After	After	After		After	<u> </u>	·
	D.F.	20 Cycles	140	260	380 s Cycles	500	,	
		Cycles	Cycles	Cycle	Cycles	Cycles		
022	.18	./85	.21	,34	.27	255		
023	.17	16	.19	./8	1265	26		<u> </u>
024	.17	19	1.19	.115	125	.23		
025	.16	.17	,2	.185	.27	.25		
026	.18	.185	.21	205	.28	265		
027	.17	195	.265	12	. 25	.26		
028	,20	. 22	-21	128	.43	42		
029	./8	.185	.215	.215	. 3	.295		
030	1	.18	.2	,205	.265	.24		
G32	.24	.185	.21	.185	265	- 235		
033		.185	215	,205	. 3/	. 295		
034	.21	.16	.115	165	• 1	. 235		
035	.25	.165	.185	185	.365	.205		
036	.25	1175	.195	,2	.3	.285		
037	.22	.185	.195	.205	.29	٠3/	· .	
TEST/ DATE	2-24-11	3-11-77	5.5-77	529-17	16-14-77	6-29-11		
TEST BY	(30)	- CRO	. (30)		(Sp)	6-29-17		
				~~ /~~				



on the solution of the solutio

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Dissi	nation Fin		I- 6 25°C	- 704-3562 C.F		3421/01-117	HEET 118 '4R	
DISSI	pation Fact	COP (Ø 10 KF	12 @ 25 L		ST P/N			
					D. NO. 0			
EST NO.	XT-1218-B		:	P/0	NON	AS8-32403	1	
	PERCENT D	ISSIPATION	FACTOR WIT	H THERMAL	SHOCK (-5	5°C to +125	°C)	
S/N	Initial D.F.	After 20 Cycles	After 140 Cycles	After 260 - Cycles	After 380 Cycles	After 500 Cycles		
038	.24	.17	.19	.185	.26	.21		
039	.22	.17	.19	.19	.265	.23		
040	.24	18	195	.195	128	.26		
241	-26	.175	-205	12	.175	.35		
242	.24	175	.195	.185	,265	.25		
243	.22	.17	.19	.18	1245	-235	,	
744	.24	.175	.195	.195	.29	1265		
245	.24	.115	.205	.195	,265	.365		
2460	.24	.115	-22	.205	103	131		
2411	.24	175	· <i>z</i>	.195	.26	1235	· · · · · · · · · · · · · · · · · · ·	
148	,28	.185	,205	2	.215	. 255	·	<u> </u>
49	,23	.18	.195	.195	.39	.29		
250	.24	.175	.205	205	.27	.245		
251	.25	.175	.205	.205	,3/	.46		
-52	122	115	.19	.18	.26	,24		<u> </u>
			7					<u> </u>
		·						
								·
				·				
	·							
								1
								1
								1.
EST	2-25-11	3-11-77	5-5-77	5-27-17	6-14-11	6-29-11		1
EST				~~/.// -		10-20-9-1-1 1500		1



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Custor	mer's Name:	NASA	S	/ 0 - 704	-35622	SI	HEET 119	OF 188
TEST:	pation Fact	- A 10VU-	LAB SUBVEZ	/	C.R.C. P/N M	83421/01-11	74R	·
01551	pation ract	.OI (W TOKHZ	ENGR.	1	CUST. P/N			
TEST NO	xT-1218-	В	Q.A. 77		PROD. NO. 0	237G		
TEST TE				u	P/O NO. N	AS8-32403		
TEST V	· 		7 .	[5	SPECIFICATION:			
SPECIAL						3 Danie 1	7.0	
	al Thermal		ΓP - 1006		MIL-0-0342	1, Para. 4.	7.9	į
	to Air) 5							
1	C to +125°C	, i nr. pei	cycle		EQUIPMENT USED:			{
ŀ	•			.]			lodel No.	ECN No.
	are no est		D.F. limit		Impedance com			1331
this	test condit	ion.	•		Precision dec capacitor	ade G	i.K. 1413	1387
					Temp. test ch	amber - Sta	tham SD9-1	130
					Thermometer -	Marshall J	E-485	1588
ľ	·		•					
	`		•		·		•	
<u> </u>	T							
			FACTOR WITH			5°C to +125	°C)	
S/N	Initial D.F.	After 20	After 140	After .260	After 380	After 500		
		Cycles	Cycles	Cycle	1 -	Cycles	,	
	 		· ·					
022		.54	.51	.53	.92	. 52	1.	
023	I	.5.3	ک	. 73	.54	,5/		
024		.64	.5/	.52	.54	.54		
025	.49	.56	.5/	.52	54	.5/		
026	.5_	.67	. వె3	.54	1.54	162		·
027	.5	.51	.51	<u> جي.</u>	.52	.52		
OZB	.56	,56	.56	.61	.62	.67		
029	,49	.56	.క	52	.86	,52	,	
030	.52	.52	,52	.59	.6.5	. 54		
032	.5	.55	.51	.6	.56	.56		
033	.49	.76	رق,	.53	,59	.99		
034	.48	.53	.46	,51	1.5	,49		
C35	.48	.53	.48	.5	.69	.64		
036	.49	.55	.49	.52	.65	.73		
037	5	.79	.49	. 52	.56	18		
TEST DATE	3-1-77	3-16-11	5-9-11	5-31-7		6-20.01		
TEST	CAC .	CRC				627-11 (20)		-
BY		ا کوا	(CRC)	CRC	.₹°C	< < < < < < < < < < < < < < < < < < <		·

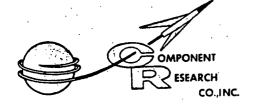


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TWX 910-343-6864

Custom	er's Name:	NASA	s/0	- 704-3562	2	S	HEET 120	OF 188.
TEST	,	· ,				183421/01-1		
Dissip	ation Facto	or@ 10 KHz	@ - 55°C		T P/N			
		• .			—	0237G		
TEST NO.	XT-1218-8					AS8-32403		
T								
		ISSIPATION				-55°C to +1	25°C)	
S/N	Initial D.F.	After 20	After 140	After 260	After 380	After 500		
.	· "."	Cycles	Cycles	Cycles	Cycles	Cycles		
038	. 5	.6	.48	.51	,54	,49		
039	,49	.54	.49	.51	.54	.74		
040	.5	.54	.49	.52	.54	1.1	•	†
041	, 5	62	.59	-59	.92	.70		
T			111	.51		,49		
042	.48	.51	.47	i i	.51			
043	.4.7	.64	146	.49	.51	.5	. , , , , , , , , , , , , , , , , , , ,	+
044	<u>.5</u>	1.6	.48	.52	.52	.66		
045	·5	.76	.49	.52	.62	. <u>58</u>		
046	.5	lolo	.5/	.54	.54	. చ5		
041	,5	.55	.49	.61	.58	.57		<u> </u>
048	.49	154	.49	.5/	.59	.55		
049	.5	.66	.5	.52	.72	.77		
000	<u>.ゔ</u>	-বর্ত	.5	.6	.65	.55		
051	,5	.56	.49	.52	.95	.64		
052	.49	.56	.48	.51	.52	.54	·	
					·			
						•		
- 					<u> </u>			
							<u> </u>	+
							<u> </u>	-
								
							· .	
			.	· · ·				
·				·				
						_	·	
TEST DATE	3-1-77	3-16-77	K-9-77	5-31-77	6-17-17	6-21-11		1
	<u> </u>	(20)	~		PHY	0~/ //		



Phone (213) 829-3615

TWX 910-343-6864

GENERAL DATA SHEET

ORIGINAL PAGE IS OF POOR QUALITY

Custo	mer's Name:	NASA		/0 - 70 ¹	4-35	622	SI	HEET 121	OF 188
TEST:			LAB SUPVR. C	39	C.R	.c. P/N M83	421/01-1174	ıR	
10 KH	pation Fact	or @	ENGR.	111		T. P/N			
	- У XT-1218-в	<u></u>	Q.A.	///		D. NO. 02	37G	. ,	
TEST T						NO. NA		1 .	
TEST			-			IFICATION:	· · · · · · · · · · · · · · · · · · ·		
SPECIAL		·						•	
Norma	al Thermal	Shock per 1	rp-1006		м	IIIC-83421	, Para. 4.7	79	
(Air	to Air) 5	00 Cycles			•	0 0)	,	• •	8
	C to +125°C	, l hr. per	cycle				•		
ACCEPTAN	CE LIMITS:				EQUIF	MENT USED:		lodel No.	ECN No.
There	are no est	ablished %	D.F. limit	s for	Imp	edance com	parator - G		1331
	test condit			` 1	Pre	cision dec		i.R. 1413	1387
						acitor			120
	•	•					amber - Sta Marshall J		130 1588
					1110	1 moniceei	, idisilari o	L 40)	1,000
	•	, .	•, •					•	ļ
								*	
	DEDGENE	DICCIDATION	L FACTOR LUI	71 7050	400	C.110.014 /	5590	·= 0 = \	
	Initial	After	FACTOR WIT	Afte		SHUCK (-	55°C to +12 After	5°C)	<u>.</u>
. s/N	D.F.	20	140	260		380	500		
		Cycles	Cycles	Cycl		Cycles	Cycles		
			1 -						
022	t	.24	.145	.11		.22	.165	·	<u> </u>
023	13	.34	.14	.183		.2	.18	·	•
024		.195	./3	.14:		165	.14		
023	125	185	.145	165	٢	12	-185	ļ 	· ·
026	115	175	145	160		.35	.30		
021	1/3	.175	1.5	.17		18	165		
028	1	.23	.19	.27	5	.35	.31	,	
029	1 2	,23	.19	.19		.43	.31		·
7362	13	.19	185	16-	<u>-</u>	.28	.225		
032	125	111	.14	/5			.21		•
		-17		100	-	.21	i '		
033		.56	.1B5	1//		.29	.45	 	- .
034	1	1165	.115	./3	_	.16	195	 	
035		115	125	14-3		.26	49		<u> </u>
036		17	.12	.15.5		-27	·23	ļ	
031	125	.16	.135	.145	<u>. </u>	.41	28	·	
TEST/ DATE	3-2-71	3-15-17	56-17	531-	71	6-16-11	6-28-17		
TEST				(a)	//	, ,	(a)	·	
ВҮ	(F)	Er l	(2) (2) (2) (2) (3) (3) (3) (3) (3) (3) (3) (3) (3) (3	Cor.	<u>.</u>	Can Can		Ļ	·
• •	V/F1	· \(\mathbb{C}/\mathbb{P}\)	~/} /	\sim		×//	\ /		



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TWX 910-343-6864

GENERAL DATA SHEET

ORIGINAL PAGE IS OF POOR QUALITY

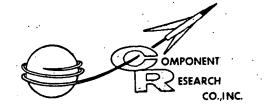
Dissi	pation Fac	tor @ 10 KH	z @ +125°C	cus	.C. P/N <u>M83</u> ST P/N DD. NO02	421/01-1174 37 <u>G</u>	+ R	· · · · · · · · · · · · · · · · · · ·
TEST NO.	XT-1218-	В	.:	P/0	NO. NA	s8 - 32403	1	
	PERCENT D	ISSIPATION	FACTOR WIT	H THERMAL S	HOCK (-55	°C to +125°	'c)	
S/N	Initial D.F.	After 20 Cycles	After 140 Cycles	After 260 Cycles	After 380 Cycles	After 500 Cycles	·	
038	//5	.17	.115	./35	.175	.14		
039	.115	165	./35	135	.18	.14		
040	.115	.16	.115	.14	.185	125		
041	.125	.195	.125	.16	,6	.34		
042	.115	18	.125	.145	.19	.4		
C43	./2	165	12	.14	.19	.165	-	
044	.12	.195	./2	.145	.185	.175		
045	.115	.5	.//5	.14	.165	.3		
046	./25	.18	.14	.165	.215	.25		
041	.115	.165	.125	.145	./8	./3		
048	.125	.115	.14	.145	.205	.165		
049	125	.215	/35	./55	. 31	.52.		
050	.12	.165	./35	.18	,23	.145		
051	125	.165	.14	.18	.41	.41		
052	.115	115	./25	.15	.19	.31		
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	······································							_
				,		·		
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	·							
TEST DATE	3.2.11	3-15-11	5-5-17	5:31-77	6-16-11	6-28-17		
TEST BY	CAN CAN			CRA	Con	Ĉ.		



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Custo	mer's Name:	NASA		/0 - 704	-35622	SI	HEET 123	of 188
TEST:			LAB SUPVE		C.R.C. P/NM	83421/01-11	74 R	
E.S	.R.	•.	ENGR.		CUST. P/N			
TEST NO	- XT-1218-	R	9.4.		PROD. NO.			
TEST TE	0 = 0 =				P/O NO	NAS8-32403		
TEST	OLT. N/A		<u> </u>	ş	PECIFICATION:			
SPECIAL						•		
(Air	al Thermal to Air) C to +125°C	500 Cycles			÷			· .
ı	E LIMIYS:			E	QUIPMENT USED:	 		
	are no est est condit		S.R. limits		E.S.R. meter - Cable assembly		ess 273	ECN No. 1130 1130
		. •		·		. i . '		
						· .		· · · · · · · · · · · · · · · · · · ·
		ITH THERMAL	SHOCK (-55°C to	+125°C)		, , , , , , , , , , , , , , , , , , ,	<u> </u>
S/N	Initial	After	After	After	After	After		
	E.S.R.	20 Cycles	140 Cycles	260 Cycles		500 Cycles		
022	16	.18	.18	.20	,32	,22		
023	.14	15	.15	.18	.22	,24		
024	.15	.16	15	.18	0.50	19		
025	.15	16	.17	.19	·22	,22		
026		,17	.19	-20	123	,23		`
0.27	16	17	.17	.20	122	. 22		
028	19	124	.28	,35	.43	.49	<u>,</u>	<u> </u>
0.29	16	.19	.2/	.24	.28	,20		
030	16	.18_	18	.21	1231	.22		
032	.16	117	.18	.26	.20	19		
033		·1B	.19	.23	.26	28		
034	14	.15	./5	17	.20	.31		-
035	.15	.17	.17	,20	.21	.24		
03/0	.16	.17	.18	123	.26	. 20		ļ <u>.</u>
037	. 1/5	.16	,16	.19	,25	131		
TEST /	2-25-11	3-11-17	5-4-17	6-2.7	176-14-77	6-39-11		
TEST BY	CRC PS,	(CPC)	Cool		(\$90)	CAU.	•	
·····		——————————————————————————————————————		,,		- C + 5.	·	



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Custom	er's Name:	NASA .	s/o	- 704-35	5622		s	SHEET 124	of 188
E.S.R	. @ 25°C			j	cús	C. P/N	3421/01-11	74R	
TEST NO.	XT-1218-	В	:				s8-32403	ì	
	E.S.R. WI	TH THERMAL	SHOCK (-55°c to	+12	5°C)		•	· · · · · · · · · · · · · · · · · · ·
S/N	Initial E.S.R. In	After 20 ∩Cycles	After 140 ∩Cycles	After 260 ΩCycle	-	After 380 Cycles	After 500 ACycles		
038	.15	.16	.16	.18		.19	.18		
039	.14	.16	.16	.18		20	18		
040	.14	.16	.16	.19		.22	.23		·
041	.16	.17	.19	21		.21	.20		
042	.16	.17	.17	.20		.22	-22		
0+3	.14	16	.16	.18	· .	.20	.21		
044	./5	.16	.16	.19	_	.22	.24		
045	.14	.16	.16	.19		.22	.,23.		
046	.160	.17	18	.23		.27	.31		
047	.15	.16	-17	.19		.19	.19	,	
048	17	.18	.19	.21	<i>;</i>	.22	.23		
049	.16	.17	.18	.20		.24	. 28		·
050	.15	.16	.17	,20		.21	.21		
051	.16	17	.18	.22		.23	.53		
052	.15	./6	./7	.20		.20	.19		
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	,		-						
TEST	2.25-71	3-//-11	5-4-77	6-2-1	,	13-14-77	6-29-17		
TEST	(S)						(3)		

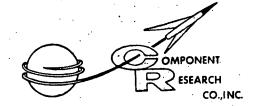


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Custo	ner's	Name:	NASA	4		چ	/o -	704-	3562	2			· St	HEET 125	of 188
TEST:		٠.		·	LAB	SUPVA.	7			P/	N M	33421	/01-11	74 R	
Seal 1		(Test)	•		ENGR		 	_	UST.						
		-1218 - B			-	2	. [ROD.	•		237G			· · · · · · · · · · · · · · · · · · ·
TEST TI					Q.A.	She			2/0 N	•	· · · · · ·	158-32	2403	1	
TEST V				· · ·			-	<u></u>	PECIFIC					· · · · · · · · · · · · · · · · · · ·	
SPECIAL						····					•				
(Air -55°(to /	nermal Nir) +125°C	500 Cy	cles						,		, Para	a. 4.7	4. 5	
ACCEPTANC								1	QUIPME	NT U	SED:		Mod	el No.	ECN No.
Leal	kage	not to	excee	ed. 1X1	0 ⁻⁶ a	tm/cc/	sec.	F	ine	leal	k dete	ctor		ont 24-120	
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	.*									•					
									.*			•			
	-														
	Ir	itial	Aft 20	er V	A	fter +0	1 :	After 260	_丿	A f 38	ter 0 /	50	ter	·	
S/N	1X	10 ⁻⁶		o ⁻⁶	ΙX	10-6	1:	(10 ⁻⁶		1X 1	0 ⁻⁶	1X1	0-6		
		s Fail	Pass	Fail	Pas	Fail		-			Fail	· · · · · · ·			
022	V		1		V		1			/		Y			
023	1		. 4		1					ļ			K		
024	ŀ	·				T				Ţ		A			
025							1								
026															
027				 		1	1	1	$\neg \uparrow \neg$	1					•
028						1	Ħ	1	_				-		
029				T .		 			1						•
030					- -	1		1							
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036	1 1			+		+		 	+	V			 		
030		- 		+		+	-	+	+-						
TEST	\ <u>\</u>		-	٠	 	<u>l</u>	 	_!		/		/	<u></u>	· ·	
DATE	2.20	8-77	3.16	-77	511	7-77			7 6.	15	-77	7.1.	27		
TEST BY				<u> </u>	_ <	Cac	_<	(\$PC) -			(\$a)		· ·		



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Custor	mer's	Name:	NAS	Α		s/0	704-	35622	<u>.</u>	·- · · · · · · · · · · · · · · · · ·		· · .	HEET	126	of 188
	Test e Leak	. Test)	· · · :.				CU	ST P/	/NM N OO		/01-11	174R		
EST NO.	XT-	1218-	В		;			P/C	NO.	. N	AS8-3	2403	1	•	
	Ini	tial	Af	ter	Af	ter 0 ノ	Af		Ąţ	ter	Af	ter			
S/N	1X 1	10 ⁻⁶	1X1	0-6	1X 1	0-6	1X10	رير (ا - 6	1X	ter 0 // 10 ⁻⁶	1X10	ter 0 / 0 0 -6			
	Pass	Fail	Pass	Fai1	Pass	Fail	Pass	Fail	Pas	s Fail	Pass	Fail			
038					1		•		1			1		•	
039	1	1	•		1		4	<i>:</i>					-		
040											1			,	
041															·
042															
043														,	
04-4															
045															
046			· L									•			
			-	·											
248		<u> </u>													
249						٠,		•							
0.50		<u> </u>						,							
051	1		1							<u> </u>	-	, L			
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TEST Date	2.28-	11	3 1/2c Ser	7.1	5:10		6-2-7	7	6.15	· <i>17</i>	7-1-	77			
TEST By	CR		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	r/		A		<u> </u>		/Ca	3			İ	



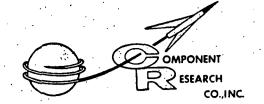
TO SECURITY OF THE PROPERTY OF

TEST REPORT SUMMARY

THERMAL SHOCK
AIR TO AIR
500 CYCLES
-55°C to +125°C

REPORT #XT-1218-C

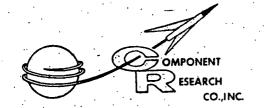
CO.,INC.		PAGE 127	OF 188
PROD. NO. 0238G	_ CUSTOMERNASA, I	MARSHALL SPACE F	LIGHT CENTER
LOT	_CUSTOMER P/N		
LOT SIZE 30	_ CUSTOMER P/ON	AS8-32403	•
C.R.C. P/N M83421/01-1186R	_ C.R.C. S/O70	04-35622	·
DATE COMPLETED July 1, 1977		· : 1	· ·
TEST	REQUIREMENT	METHOD PARAGRAPH	ACC
Insulation Resistance	3.11	4.7.7	29 1
Capacitance	N/A	4.7.8	30 0
Dissipation Factor	3.13	4.7.9	30 0
E.S.R.			30 0
Seal Test	3.9	4.7.5	21 9
		,·	
		1	
		,	
QUALITY CONTROL	D	ATE	
SHIPPI	NG DATA		
ORDER # DATE SHIPPED	O QTY SHIPPED I		TY STOCKED
			· .
	 		
	-		
F-634			
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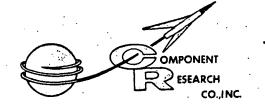
tusto	<u>mer's Name:</u>	NASA		VERT 10	+-);	0022		SHEET 128	OF 188	
TEST:	ation Resis	tance	LAB SUPVR.	Z 10	C.R	.c. P/N - M8	3421/01-11	86 R	•	
	inal to Ter		ENGR.		cus	ST. P/N				
TEST NO			Q.A.	'//	PRO	DD. NO. 02	38G			
TEST T	емр. 25°C			~	P/C	NONA	58-32403	i		
TEST V	OLT. 30 VDC]	•	SPEC	IFICATION:				
SPECIAL					١.	11L-C-83421	Bara li	7 7		
	al Thermal		rp-1006		.	116-6-03421	, rara. 4.	/;• /		
	to Air) 5 C to +125°C		cycle							
	CE LIMITS:			·	EOUI	PMENT USED:				
·	• •	(((0.00						Model No.	ECN No.	
	maximum or 500 cycles	um.		. Micró V <i>-l</i> L. Test racl		H.P. 425A CRC None	1480 647			
	there are	for	D.C. volt ohm meter - Simpson 260 1357							
	um leakage		•		tery pack	••	N/A			
		•	•		ļ			. •	•	
	. *								,	
				·					•	
	T									
	INSULATIO	N RESISTANO					to +125°C)	Ţ	
· S/N	I.R.	After 20	After 140	Afte 260		After 380	After 500		,	
		Cycles	Cycles	Cycl		Cycles	Cycles			
ļ		<u> </u>					_			
086	10	12	6	9		7	8		<u> </u>	
087	14	13		9		6	9	ļ		
088	14	183	7	6.		7	B	<u> </u>		
089	18	14		5		8	9	ļ	ļ	
090	13		7	.8		7	\mathcal{B}			
egi	1.3	12	7	10		8	ε			
092	<i>b</i>	10	6	6		:6	ε	<u> </u>		
093	7	10	.8	. 10		2	7			
094	6	<u> </u>	5	11.		9	8	·	·	
09.5	6	6	8	6	:	. 5	7			
096	6	12	5	7	•	8	8			
091	7	6	5	. 9	•	2	80		-	
oge	5	12	6	e		8	É	• •		
099	000 5 1 10 10			10		7	\mathcal{E}			
100	7	6	රි	9		E	10			
TEST DATE .	2:25-77	3-71-77	5-4-11	5:27-7	7 <u>7</u> .	6-14-77	6-29-11			
TEST BY	(April	्रिटी	(San)	<i>विदेश</i>	•	(Sec)				



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EST	ner's Name:		•	- 704-35622 c.r.		3421/01-118	HEET 129 16R	
•	ation Resis		°C	l '	T P/N			
(Term	ninal to Te	rmina1)		• • •	D. NO. 02	38G		
EST NO.	XT-1218-C		•	P/0	NO. NA	s8-32403	1	
	INSULATIO	ON ŔĔŚISTAN	CE WITH TH	ERMAL SHOCK	(-55°C	to +125°C)		
S/N	Initial	After	After	After	After	After		
	I.R.	20 Cycles	140 Cycles	260 Cycles	380 Cycles	500 Cycles		
101	5	7	7	10	7	8	· ·	
101		6	7		<u> </u>	2		-
102	6		7	10	<u> </u>	8		<u> </u>
103		6		9				
104	-6	9	<u> </u>	10	6	8		
105	6	7	E	9	<u> 5 </u>	7		
106	6	<u> 8</u>	8	. 9	6	5		_
106	5	6.	6	9		7		
109	3	12	8	10	5	7		
110	7	5	9	10.	5	5		_
///	9	. //	9	12	. 4	7		•
112	B	12	B	13	· 5	6		
11.3	7	. 9.	8	10	్ చ	6		
114	1	5	2	10	7	7 ·		
116	8	5	7	14	8	7		
117	E	15	.27 LA	1801LA	2.61LA	B.G.L.A		
			7.5				•	
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•			<u> </u>		· · · · · · · · · · · · · · · · · · ·			
TEST			/	· · · · ·	~ . / <u>~</u> ~			
PATE "	285-77	3:11:77	5.4.77	1 / / / 1	6-14-77	6-29-77	-	·
3Y .	125	- 173	CAC		\(\frac{c^2}{2}\)			



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Custo	omer¹s Name	: NASA	S	/0 - 70	4-35	622	SI	HEET 130	OF	188	
TEST:			LAB SUPYRES		CB	.C. P/NM	83421/01-11			, .	
	ation Resis		ENGR.	1/	4	T. P/N					
	inal to Ter			-/			238G	<u> </u>			
	EMP55°C		Q.A. (/2	re	1		AS8-32403	:			
	OLT. 30 VDC	<u> </u>				FICATION:		·			
TEST V		<u>-</u>	ــــــــــــــــــــــــــــــــــــــ	 	=	rication.		•			
	Thermal S	hock per Ti	P-1006		MIL-C-83421, Para. 4.7.7						
	to Air) 5										
- 55°	C to +125°C	, l hr. pe	cycle								
ACCEPTAN	E LIMITS:				EQUIP	MENT USED:					
		abliobad 1:	mita far mi		ا د	Miana W		odel No.	ECN N		
	are no esta ge•current (mits for ma	ax i mum	D.C. Micro V-Ammeter H.P. 425A 1480 I.R. Test rack CRC None 647						
, coka	ge-carrence		٠.		D.C. volt ohm meter - Simpson 260 1357						
			• •				est chamber		130		
":				•	<u> </u>	_		SDG-1	. ~ 00		
	• • • • •		•				Marshall J	,	1588	5	
	•		,		bat	tery pack		, N/A	٠		
	,			·	<u> </u>						
	INSULATI	ON RESISTAL	ICE WITH TH	ERMAL S	носк	(- 55°C	to +125°C)				
S/N	Initial	After	After	Afte		After	After			`	
	I.R.	20	140	260		380	500		ŀ		
		Cycles	Cycles	Cycl	es	Cycles	Cycles	, .			
086	10	29	27	-23	5	_17	40		<u> </u>		
081	/3	19	29	28	3	21	45				
088	12	18	25	30		43	72				
089	12	30	42	25		22	50				
090	10	16	35	30		45	70				
•	13	12	:30	56		27	45				
091		20	30	28		42	75				
092	10	F		55	1	41	l /.				
093		19	28	I		42	68 18	}		·.··	
091	.10	/5	29	25		·			<u> </u>	· ·	
095	12	21	32	55		16	45				
096	10	15	20	22		12	66				
091	10	21	12	18		17	120		ļ		
	11	22	34	21		<u> 35 </u>	84			 	
098	10:	:17	32	20		16	55	:			
100	16.	. 20	.30	18		14	52				
TEST DATE	3-1-11	3-17-17	5-9-77	5-3/	77	6-17-71	6-28-77	·			
TE ST BY	(50)	Last Car			7/		1				
	(TOT)		200	الرجيد	i	(PC)		L	<u> </u>		



Phone (213) 829-3615

TWX 910-343-6864

	er's Name:	NASA	\$/0	- 704-3562	2	s	HEET 131	OF 188
	tion Resist nal to Term	tance @ -55° ninal)	'c	cus	i.C. P/N <u>M8</u> ST P/N OD. NO. <u>02</u>		36 R	, .
TEST NO.	XT-1218-0	<u>; </u>	. ;	P/C	NO. NA	58-32403	<u> </u>	
	INSULATIO	N RESISTANO	E WITH THE	RMAL SHOCK	(- 55°C	to +125°C)	•	
S/N	Initial	After 20 Cycles	After 140 Cycles	After 260 Cycles	After 380 Cycles	After 500 Cycles	·	
101	15	18	30	25	18	54	·	
102	12	18	23	17	19	50		
103	15	27	27	15	43	82		
104-	16	24	31_	42	33_	84		
105	14	22	27	43	42	84	:	
106	12	33	27	42	25	90		
108	14	. 19	31	17	38	125		
109	12	19	40	43	22	85.		·
110	13	19	30	55	42	82		
111	12	8	25	32	34	75		
112	14	20	20	34	17	130		
113	G	26	25	35	20	55		
114		19	35	90	20	42		
116	15	17.	30	40	30	22		
117	14	10	200 LA	240 11A	10 uA	70 MA		
. /								
							•	
	•							
· ,								
								-
		·						
	•							
TEST DATE	3-1-17	3-17-11	5-9-77	5:31-77	6-17-17	6-28-17	•	
TEST BY				(30)		(Sp)		



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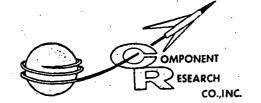
Custor	mer's Name:	. NASA		10 - 70	04 - 35	622	SI	HEET 132	OF 188			
TEST:	• • • • • • • • • • • • • • • • • • • •		LAB SUPVR	1	7		183421/01-11		1			
	lation Resi minal to Te	·	ENGR.	 	4 .	T. P/N						
	. XT-1218-C) [:	1		0238G		·			
TEST TE			Q.A.	ne	1	· · · · · · · · · · · · · · · · · · ·	NAS8-32403	1 -				
TEST VO	20		-		SPECIFICATION:							
SPECIAL N					=							
		Shock per TF	P-1006		M	IL-C-83421	1, Para. 4.7	7.7	•			
	to Air) 5		. دامید						•			
		, 1 hr. per	сусте		1							
ACCEPTANCE	E LIMITS:	•			EQUIP	MENT USED:	 Mo	del No.	ECN No.			
		or 8,000 me					Ammeter -	H.P. 425A	1480			
		air to air				. test rac			647			
	are no esta je current (ablished li @ +125°C	mits for ma	aximum			n meter - Si est chamber		1357 130			
l cavas.	e current o	W 1127 0			I City	Clatule t	est cliquipel	SDG-1	טרו أ			
}							Marshall J	E-485	1588			
					Batt	ery pack		N/A	į			
	····				<u> </u>				·			
	INSULATI	ON RESISTAN	ICE WITH TH	ERMAL S	носк	(- 55°0	to +125°C)					
s/N	Initial	After	After	Afte	1	After	After					
	I.R.	20 Cycles	140 Cycles	260	1	380	500					
		Cycles	Cycles	Cycl	es	Cycles	Cycles					
086	400	230	3.50	360	2	130	130		<u> </u>			
087	360	450	290	380	2	350	370	<u></u>	<u> </u>			
088	420	360	410	531	2	550	2.90	·				
089	680	330	260	290	2	330	370					
090	1500	260	320	470		320	200					
091	900	210	270	120		400	310					
092	1100	240	130	300		330	160					
093	1800	730	430	570		400	210	·				
004	1100	630	300	550		950	310		· · · · · · · · · · · · · · · · · · ·			
095	900	260	190	560		480	280					
	830	1 3	210	1 .	1	400	1					
096		470 540	ſi	430			350					
097	800		830	900	1	4.30	380					
098	260	400	410	280		260	270		 			
099	1300	260	490	240	1	420	55	 	<u> </u>			
100	700	530	580	330	2	125	240					
TEST DATE	3-1-77	3-1677	59.17	53/	77	6-17-71.	6-29-77					
TEST BY	Eng	Zeg,	Zerc F			/car						
السنتا	- Eir	للنجنيا		130		- E -	(F)	L	<u> </u>			



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TWX 910-343-6864

Custon	ner's Name:	. NASA	s/0	- 704-3562		•	SHEET 133	OF 188
TEST Insul		stance @ 12		C.F	R.C. P/NM ST P/N	83421/01-1 238G		
TEST NO.	XT-1218-0	·				AS8-32403	i .	
	1	ON RESISTAN	ICE WITH TH	ERMAL SHOC	K (-55°C	to +125°C)	<u> </u>	······································
S/N	Initial I.R.	After 20 Cycles	After 140 Cycles	After 260 Cycles	After 380 Cycles	After 500 Cycles		
101	400	330	950	250	410	240		
102	660	370	390	500	360	400		
103	160	590	610	570	650	260		
104	400	420	260	390	720	190		
105	600	5.50	630	550	450	400		
106	460	570	370	410	540	200		
108	320	780	650	330	580	290		
109	360	950	910	700	250	380	,	
110	1050	450	350	330	240	230		
111	600	500	1400	2050	275	2000		· · · · · · · · · · · · · · · · · · ·
113	500	850	570	910	560	340		· · · · · · · · · · · · · · · · · · ·
1/3	900	610	750	430	920	620		
114	500	460	210	990	1100	370		
116	460	320	410	370	240	240		
117	1500	5900	ILUA	115 11 A	9216A	92111		
				· ·		<u> </u>		
_			· · · · · · · · · · · · · · · · · · ·				<u> </u>	
		 						
							 	
·							·	-
			<u> </u>	·				
TEST DATE	3-/-77	3-16-77	59-77	5-3/-77	6-17-77	6.29.77		
7E37 BY		(Ga)	Ço.	(Spo)	(C)	(SPC)		



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TWX 910-343-6864

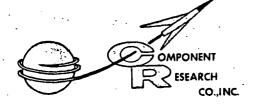
Custon	ner's Name:	NASA		/0 - 70	L_35	622		SHEET 134	OF 188	
TEST:			LAB SUPVR.	in i			83421/01-1		0. 100	
	tance Drif 1 Shock	t with	ENGR.	4//	l	.C. P/N <u>M</u> ST. P/N	03421/01-1	1100 1		
	. XT-1218-		Q.A.	3/20			238G			
TEST TE		·			ľ		AS8-32403	i i		
TEST VO	11.70		-			IFICATION:				
SPECIAL N										
Norma (Air	il Thermal to Air)	Shock per 1 500 Cycles , 1 hr. per	•		- MIL-C-83421, Para. 4.7.8					
ACCEPTANC	-	<u> </u>			FOUL	PMENT USED:		Model No.	<u> </u>	
]							ECN No.			
	to .165uF 500 cycles	air to air	thermal sl	hock		edance comp cision deca		G.R. 1654 G.R. 1413	1331 1387	
		ablished %		e ·	capacitor					
drift	limits for	this test	condition.							
	•				١.,		·			
		•	•		,				•	
	•	•								
				لـــــا						
		APACITANCE				,``	$5^{\circ}C$ to $+12$	25°C)		
S/N	Initial	After	After	Afte		After	After		Į	
	Cap. In	20 Cycles	140 Cycles	260		380 Cualas	500		1	
·		Cycles	cycles	Cycle		Cycles	Cycles			
086	.148335	+.035	1.065	1.13	3	7.16	+.185	_	<u> </u>	
087	.149630	1.045	+.105	7.13	5	1.215	1.29			
CBB	148703	1.04	+115	1.18		1.225	1.2.5			
i 1	.150061	1.025	+1.5	1.08	_ م	+.15	+.295			
· / /	.148003	+.04	+OB5.	+09		1.085	1.095			
091	.148746	1.05	1.09	+.18:		+275	+46			
002	148389		t. C.8.5	+14		+.19	t.265			
003	151276	1:03	+06	+15		t.28	t. 4			
	14891	1	+045	T. 10:		7.15	+.175	 	<u> </u>	
	148260		+.085	t. 14		+.175	1.18		1	
· / .	.148091	+255	+.15	7.21		t.24	1.27	1	 	
	150944		1.045	1.08		+.105			-	
//	149056	+.015 +.05	7.075 1.155	+. Z		+.22	t.215 t.26	- 		
099	148114	+04	1./	t.17.		+.11/5	1.24	1	+	
100	-	1.03.5	7./	+13		7.17	1.19	 	 	
TEST	7	· -					,			
DATE . TEST	2.25-77 ~	3-11-77	5-3-71	5.27	•	6-14-77	6-30-17	<u> </u>		
BY	CAC	(RC)	्रिक्ट ;		1	30	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$			



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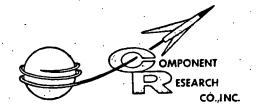
	oacitance dr	ift with t	hermal	C.R	.c. P/N M83L		HEET 135 86R	, ,
sho	ock		• • •		ST P/N			
·			· · ·	PRO	D. NO. 0238	3 G	· 	· ·
EST NO.	XT-1218-C		· :	P/0	NO. NAS8-	32403		
					hock -55°C			,
S/N	Initial capacitance	After	After 140	After 260	After 380	After 500		
	in uF	cycles	cycles	cycles	cycles	cycles		
01	148386	+.025	<i>t.</i> /	+.16	+.185	+.115		
02	149718		+.135	+.21	4.3	1.39		
03	148084		+.//	+. 19.5	+.27	+.36		
04	.149354		+.095	+.19	4.24	4.34		
05	.150858	•	+.09	+.15	+.17	+.205		
06	147488	4.03	+15	+185	1.24	p. 33		
108	148893		r.235	1.27	1.39	7.38		
109	1484-10		t.12	+.195	4.27	1.36		
10	149340		+155	7.15	1.195	×33	,	
///	.151038		+.17	+215	1.34	+.26		·
112	149.596	. / ,	1.105	+.15	+.19	+235		
113	148946		+.105	+.16	1.165	+.165		
114	153162		+.145	+.225				
116	148961	_	1.095	t.//	t.115	1.165		
117	148771	t.0b	r.38	+1.1	+1.6	+1.1		
								
			· .	·-····································				
			•					
	 	<u> </u>						
	1.							
				<u> </u>				
							·	
						<u> </u>		
-							•	
EST	02571	2-11	5-2-9-9	5-OH HIS	611 -11	6-25 00		
ATE EST	16.43.7/	J//-//	5-3-77	W-51-11	6-14-71	6-30-77		



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TWX 910-343-6864

CUST	MER'S NAME	: NASA S	/0-704-356	32 1	· .	·	S	HEET 136	OF 188
TEST:	citance dri	ft with	LAB SUPVR		C.R	.c. P/NM8	3421/01-118	36 _R	
	nal shock	TC WICH	ENGR.	V	4	ST. P/N			
TEST NO	· XT-1218-C	· · · · · · · · · · · · · · · · · · ·	Q.A.		J I PRO	OD. NO. <u>02</u>	38G		
	MP55°C] XII			NO. NAS8-		<u> </u>	·
TEST V	OLT. N/A				SPEC	IFICATION:	 		
(Air -55°(thermal to Air) 50 to +125°C	shock per T O cycles , 1 hr. per	•		MIL-C-83421, para. 4.7.8				
ACCEPTANO	E LIMITS:				EQUI	PMENT USED:		1odel No.	ECN No.
		ablished in				edance com		R. 1654	1331
% cap.	% cap. drift limits for this test condition					ecision dec pacitor	ade (G.R. 1413	1387
	·.	• • •			Ten	perature t	est Stathar	n SDG-1	130
1			•	•		mber ermometer -	Marshall .	J E-485	1588
				•					
	Percent	capacitance	change wi	th then	ma l	shock -55°	C to +125°(·	
S/N	Initial	After	After	After		After	After		
1	capacitanc		140	260	_	380	500	٠.	
	in u.i.	cycles	cycles	cycle	s 	cycles	cycles	<u> </u>	
056	146421	-05	7.12	7.15	5	t.22	+.22		
081	147590	705	1.12	4.15	5	12	-155		·
088	146830	-055	7.13	1.19		7.28	7.3		
080	148130	-015	+.09	-06		t.14	-27		·
000	146195	-035	108	109		1.075	7.095		<u> </u>
1 /	146855	•	-075	718		7.19	7/15		
092	142550	-05	1.09	1.13.	5	7.025	-34		
003	149300	-05	731	- 3		1.28	-21		
cod-	146060		1.055	+.12	<u> </u>	7.19	7.175		·
605	146330	1	7.11	7.18		1.21	1.165		
006	16340		1.15	7.2	•	1.24	t. 215		
007	-14.0040	T /.	t./2	+14	5	7015	-:39		-
OOB	147220		+.195	Tiale		t.24	T. 255		
099	146260		+.13	+19		1.19	1.145		
100	.149.360	1	<i>+.</i> /	7.19	5	t.15	T. 22		
TEST DATE	3-1-11	3-17-77	5-9-77	5-3/-7	•		6-29-11		
TEST BY	(SPC)	(30)	(CPC)						· ·
									



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GENERAL DATA SHEET

CUCTO	AEDIC NAME.	NACA C	10 70h 256	22				SHEET 137	OF 188
YEAY	MER'S NAME: Dacitance d				C.R.	.c. P/N M83	421/01 - 1		VF 100
	ock	a dang		• 1		T P/N			
		· · · · · · · · · · · · · · · · · · ·		F	PRO	D. NO. 023	8 G		<u></u>
TEST NO.	XT-1218-C	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	<u>.</u> F	P/0	NO. NASS	-32403		
		apacitance			l s			· ·	
S/N	Initial capacitance	After 20	After 140	After 260	-	After 380	Afte r 500	<u>;</u>	
		cycles	cycles	cycles		cycles	cycles		
101	.146520	63	t.145	7.23	3	<i>t.</i> 2	+33	<u> </u>	<u> </u>
102	147920	-04	t.15	-18		+.125	<u>3</u>	<u> </u>	
103	146200	045	+.115	-22.	5	124	-195	<u> </u>	<u> </u>
104	147350	-055	+.115	- 14		125	-14	<u> </u>	
105	.148880	-075	7.135	+.12.	5	+22	<i>†.165</i>	ļ [.]	
106	145598	7055	7.005	- 2a	2	1.23	31	1	
108	147019	-079	7.17	1.24	<u>'</u> 5	1.27	-27		
100	.146529	-055	-29	-23	<u>5</u>	1.265	-205		
110	147439	-05	1.045	-05	5	+.075	-31		
111	149179	-07	1.065	1.2		+.15	1:225		
112	149743	-025	+.05	+.18	\dashv	+16	1.04		
1/3	14/163	-05	-015	t.12	5	+.12	+41		<u> </u>
114	151217	-005	+.095	-3/		1.01	-1.05	<u> </u>	
116	147171	-06	+.015	+.07	5	+.085	t. 13		
117	147037	-025	+41	+64	-	192	+.31		
<u> </u>					_	•			
						· · ·			ļ
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<u>.</u>	· ·				_				ļ
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				<u> </u>	_	· . !		· ·	
								·	<u> </u>
				·	.				
					_			<u>.</u>	
DATE	2.28-11	3-16-77	5-9-77	5-31-7	1	6-17-77	6-26-17	,	
TEST BY	(1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	To of	(C. C. C. C. C. C. C. C. C. C. C. C. C.	Cop Cop		(Color	(P. 28)		

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GENERAL DATA SHEET

ORIGINAL PAGE IS OF POOR QUALITY

Custon	ner's Name:	NASA	\$	/o. - 704	-35622		SHEET 138	OF 188
TEST: LAB SUPUR					C.R.C. P/N	183421/01-118	36 R	, .
Capacitance drift with thermal shock			ENGR.		CUST. P/N			
	XT-1218-C		9.A.		PROD. NO. 0238G			
TEST TEMP. 125°C			The same of the sa		P/O NO. NAS8-32403			
TEST VOLT. N/A					SPECIFICATION:			
SPECIAL NOTES:								
Normal thermal shock per T.P. 1006 (Air to Air) 500 cycles					Mil-C-83421, para. 4.7.8			
-55°C to +125°C, 1 hr. per cycle								
ACCEPTANCE LIMITS:								ECN No.
There are no established initial capacitance					Impedance comparator G.R. 1654 1331 Precision decade G.R. 1413 1387			
and % cap. drift limits for this test condition.					capacitor			
					Temperature test chamber Statham 130			
				T	Manual = 3.3	SDG-1	100	
						- Marshall	J E-485	1588
]				
	<u> </u>	· . · · · · · · · · · · · · · · · · · ·						
	Percent capacitance change with thermal shock -55°C to +125°C							
S/N	Initial	After	After	After	After	After		
	capacitance in u.f.		140	260	380	500	,	ļ.
		cycles	cycles	cycles	cycles	cycles		
086	.148472	+045	+.005	4.03	+055	+04		
087	149652	1.06	+.03	1.04	1.26	1.06		
088	148833	+055	+025	+06	5 41	1.095		·
080	150152	1.04	4.01	101	+24	+.035		
090		T	-005	+605		-03		
091	148862		-045	-135		4.03		
093	.148.532	1	+.005	+.025		7.03	1.	
093	.151662		6.00	+.215	Ī	+.01	1	
oan	147982	li .	-01	7.015				
				1				
095	148463	1.04	4.015	1.035		F.C/	<u> </u>	
006	148452	T	+.015	+.035		+.035	 	-
000	151002	1.05	-01	7.01	7.1	-01	 	
098	.149332		+.C2	4.635	i	1:02	 	
099	.1482K2		+.63	1.065	i	1.65	 	
100	151622	1.055	+015	+035	7.04	-005	 	· · ·
TEST DATE	3-1-77	3-17-77	5-6-77	5:31-7	7 6-17-17	6:20:77	<u></u>	
TEST BY	(3)	(0 o m	(5)	1		1805		•



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TWX 910-343-6864

CUSTOME	R'S NAME:	NASA		s/0-704-			HEET 139	OF 188			
	ance drift shock	@ +125°C w	ith	cu	C.R.C. P/N M83421/01-1186R CUST P/N PROD. NO0238G						
EST NO.	XT-1218-C		* * *		P/O NONAS8-32403						
	Percent ca	apacitance	change wit	h thermal s	shock -55°C	to +125°C					
S/N	Initial capacitance in u.f.	After 20 cycles	After 140 cycles	After 260 cycles	After 380 cycles	After 500 cycles					
101	148642	+065	+.07.5	1.035	+.05	+.005					
102	140999	+.065	+03_	t.225	+.32	+.03					
103	148300	107	1.015	7.225	1.35	+045					
104	149479	1.065	0.00_	+.205	+.29	4.035					
105	151069	1075	+035	1065	4.1	109					
106	147540	1:135	+0h	1:23	t.3	1.015		ļ			
108	.140,60	7.23	+135	+./3	-1195	+.12		ļ			
100	148499	+.105	+105	+.19	7.32	1.025					
110	149629	+085	+035	+.015	4.19	005					
///	.151389	7.085	+045	+.05	1.06	+.015	,				
112	143749	1.065	+.04	+.035	+055	1.025					
113	149169	+.06-	1.005	+.015	+04	+.01		-			
114	.153479	109	4035	+.15	434	1.065					
116	.149219	+065	1.01_	05	005	02		ļ			
1/7	148929	7.055	1.65	+5.0	+1.55	+1.45		<u> </u>			
				 		·		 			
		· · · · · · · · · · · · · · · · · · ·	 	· · · · · · · · · · · · · · · · · · ·		·		 			
. :	<u> </u>		<u> </u>	·			 	-			
					<u> </u>		<u> </u>	 			
	,		<u>'</u>					 			
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•								 			
	·				ļ		-	 			
-											
EST		· - ·	 -	· · · · · · · · · · · · · · · · · · ·	<u> </u>	•					
DATE TEST	3-1-71	3-17-11	5-6-17	5:31-77	6-17:77	6-30-11		-			
BY	(Se ortel	() (<u>-</u>	الماري	6.5	12 n L	(g. t)	·	1			



open in the contract of the co

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TWX 910-343-6864

CUSTOM	IER'S NAME:	NASA		S/0	j - 70	4-35622		SHEET 140	OF 188
TEST.:			LAB SUPVE	>	C.R	.c. P/N M831	+21/01-118	6R	
Dissip 1KHz	ation fact	or@	ENGR.	111		ST. P/N			
	XT-1218-C		Q.A. 3	-		D. NO. 0238	3 G	• .	
	MP. 25°C			12		NO. NASS		1	
	DLT. N/A					FICATION:	<u> </u>		
SPECIAL N			<u> </u>					•	
	thermal s		P. 1006	. 1	_ M	li 1-C-83421	, para. 4.	7.9	•
	o Air) 50								
	to +125°C,	i nr. per	cycle	·		·		·	
ACCEPTANC	E LIMITS:	•		÷	EQUIF	MENT USED:	.1	Model No.	ECN No.
			thermal s			edance comp		G.R. 1654	1331
			D.F. limits	s for		cision deca	ade	G.R. 1413	1387
this	est condit	ion.	-		ca	pacitor		•	
		•					•	•	
					.•				
									•
	·		•						
	Percent d	issipation	factor wit	h therma	al s	hock -55°C	to +125		
S/N	Initial	After	After	After	·.	After	After		
	D.F.	20	140	260	·	380	500		· -
		cycles	cycles	cycles	3	cycles	cycles		
080	.07	.08	.07	.08	3	075	.075	<u> </u>	
087	.07	.08	.07	.08	3	.075	.08		
680	,	.085	.075	.08	i	,085	.085		
089	.07	.085	.075	.08		.075	.08		
090	.07	.085	-075	.08		.08	.08		
1 '	.07	.08	/	.08		.08	.07.5		
001	025	.09	.07	1-			, / / . 1		
092	107.		l	.09	<u></u>	.095	<u></u>	 	
003		.085	.075	.08		085	.075	- 	
004	07	08	.065	.08		.075	.075	 	
095	07	.085	,065	-07		.075	,08		
006	.065	.08	.07	.08		.675	.08	· -	
007	.07	.085	.075	.08	35	.06	.085	 	
098	.07	.085	.075	- OE	3.5	1085	.085	<u> </u>	<u> </u>
000	.07	.08	.075	.08	35	.08	<u>,085</u>		<u> </u>
100	07	.085	.015	.01		.075	.08		
TEST DATE	2-25-11	3-11-77	5-3-77	5-21-1		6-14-77	6-30-77	,	
TEST	13>	-					- CI		
BY					'	200	<u> </u>	ــــــــــــــــــــــــــــــــــــــ	<u> </u>



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Dis	sipation fa	ctor @ IKH	z @ 25°C		.c. P/N <u>M83</u>	421/01-1186	S R	۲.
	<u> </u>				D. NO. 023	8G		
ST NO.	XT-1218-C			P/0	NO. NAS8-	32403		
	Percent di	issipation	factor with	thermal s) .	
S/N	initial D.F.	After 20 cycles	After 140 cycles	After 260 cycles	After 380 cycles	After 500 ' cycles		-
101	07	.075	.075	.08	.075	.065		
103	.07	.08	.07	.085	.085	.08	•	
103	.07	:08	.065	.085	.085	.075		
104-	.075	.085	.075	.09	.085	.085		
105	.075	.085	.075	.085	.085	.085		
106	.07	.075	.075	.085	.085	.08		
108	.01	085	.075	.085	085	.085		
109	07	.08	.065	.08	.08	.075.		
110	.07	.08	.075	.085	.085	.08		
///	.07	.085	.015	.085	.085	.085		
112	.07	.075	.065	· <i>c</i> 8	075	.075		·
//3	.07	.08	-07	.075	.085	.065		·
114	.07	.085	.07	.085	.085	.08		·
116	.07	.075	.07	.075	.075	.145		
117	.07	.08	.075	,84	-09	.08		
		ļ						
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		,				·		
ST ATE	2-28-11	3-11-17	5-3-11	527-71	6-14-17	6-30-17		
5 9 T	- Cor	(60)	Er)		(Sc)			



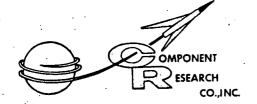
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CUSTO	MER'S NAME:	NASA		Con \$/0-	-704	-35622	· Sł	HEET 14	2 .OF	188
TEST:	oation fact	or	LAB SUPVR.		C.R	.C. P/N M83	421/01-1186	R'		``
@ 1KH;	z		ENGR.							<u> </u>
TEST NO	- XT-1218-C	· · · · · · · · · · · · · · · · · · ·	0.A.		PRO	D. NO. <u>023</u>	8G			
	EMP55°C				P/0	NO. NAS8-		. !		————:
	OLT. N/A				SPEC	IFICATION:				·
(Air 1	thermal s co Air) 50	hock per T. O cycles I hr. per			- -		l, para. 4.	7.9		
		.•	٠			PMENT USED:				ECN No
	are no est est condit	ablished % ion.	D.F. limits	s for	Pre	cision Dec	parator ade capacit est chamber	or G.R.	am	1331 1387 130
ł			•		The	rmometer -	Marshall J		•	1588
1	,	·			,				,	
	•			÷.						
	Percent d	issipation	factor wit	h therma	el s	hock (-55°	C to +125°C	·)	******	
S/N	Initial	After	After	After		After	After	ĺ		 -
	D.F.	20	140	260			500	İ	,	
	<u> </u>	cycles	cycles	cycles	3	cycles	cycles			
086	.40	.38	.37	-38	3	.36	.36.			·
089	.40	.4	.39	. 39]	.51	.56	<u> </u>		
088	.36	.41	.39	.39		.36	,41			
089	.37	.37	.37	.46		.64	.6			·
090	.37	.36	.37	.38		.37	-39			·
091	.35	.36	.4	.45	<u> </u>	.49	.63			
093	.38	.38	.38	.39		4-7	.65			
093	.37	.37	.ح. ا	.5/		.64	.5			
004	.36	.36	.37	.38		-37	.37			
095		.37	1.30	.39		.51	.4			
oak	.37	,36	.36	.3%		.36	.36			
001	-36	.36	.37	.38		.44	.40			-
095	-37	.42	.37	.37		.36	.66			
099	.37	.36	.36	.30		.38	44			
100	:37	.39	.37	38		.58	-39			
TEST	3-1-77	3-17-77	5-4-77	5-31-7		6-17-71	6-29-11	·		
TEST BY		(3)				-				
<u> </u>						(S)	(2)	L		



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GENERAL DATA SHEET

ORIGINAL PAGE IS OF POOR QUALITY

ST	2-28-11	3-16-71	5-9-77	5-31-77	6-17-11	6-39-17		
						<u>.</u>		
	·		<u> </u>				- -	
							<u> </u>	
·								
								
								-
				1	<u> </u>			
	- 2467	.38	1.5	1.20	1	,	,	
16	.36		.36	.37	.52	.39		
	.35	.37)		' .	I		
14	.37	1	.38	.5	.49	,49	_	
113	-36	.36	.37	.38	.44	.66	,	
12	-36	.36	20	.39	.51	.41	· · · · · · · · · · · · · · · · · · ·	
11	.37	.36	.39	1 '	149	.46	1	
10	.36	.36	-39	.59	.51	.51	· · · · · · · · · · · · · · · · · · ·	,
-	ł .	.39	.37	L	.67	i .		
06 08	.3.6 .36	T	.37	52 38	.56	.55		
05	37	.38 .5	38	-39	·38	.47		
04	37	14	.38	.52	.62	5		
03	.36	-36	.37		.52	-5		
02	.37	37	.38	.52	.52	.87		
01	.36	,36	.37	.38	.44	.4		
	21	cycles	cycles	cycles	cycles	cycles		
S/N	Initial D.F.	After 20	After 140	After 260	After 380	After 500	,	
_ 44 .			1			C to +125°C).	· ·
ST NO.	XT-1218-0		· · · · · · · · · · · · · · · · · · ·		NO. NAS	8-32403	<u> </u>	
	· · · · · · · · · · · · · · · · · · ·			PR	DD. NO. 023	8G		
issipa	tion facto	or @ 1KHz @	-55°C		ST P/N	<u> </u>		
T.					C DAL MS	3421/01-118	16p	, .



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CUST	MER'S NAME	: NASA	(CRC	S/0-70	<u>54-3</u>	5622	SI	HEET 144	OF 18	38
TEST:			LAB SUPERFY		C.R	.c. P/N M83	421/01-1186	R		, •
Dissip	oation fact	or @ IKHZ	ENGR.	1/		ST. P/N			-	;
TEST NO	XT-1218-C		Q.A.		PRO	D. NO. 023	3 G			···
	MP. 125°C		1	℃.		NO. NAS8-				
TEST V	OLT. N/A		1		SPEC	IFICATION:	-		-	
SPECIAL	NOTES: -					IIL-C-83421	. para. 4.7	. 9 ·		
	thermal sh		1006		-		, , , , , , , , , , , , , , , , , , , ,			
	o Air) 500 to 125°C;		vole					•		
	E LIMITS:				EQUI	MENT USED:	· · · · · · · · · · · · · · · · · · ·	Model No.	ECN N	
There	are no est	ablished %	D.F. limits	s for	l mo	edance comp			1331	ю.
	est condit				Pre	cision deca	de cap.	G.R. 1413	1387	.
1		· .			Tem	perature to			• • • •	!
					The	rmometer -		am SDG-1 F-485	130 1588	
1					1110		narsharr o	L 40)	. , , ,	ĺ
İ			•,				•	' .		:
										-
	Percent d	issipation	factor witl	h therma	al s	hock (-55°	°C to +125°	c)		
S/N	Initial	After	After	After		After	After			
	D.F.	20	140	260		380	500			
		cycles	cycles	cycles		cycles	cycles			
086	-08	.04	.035	.03	5	.04	.04	· · · · · · · · · · · · · · · · · · ·		
087	.08	.04	.035	.032	5_	.055	.04.5	·		
088	.04	.05	.04	.04:	<u> </u>	.05	.065			
089	.04	.04	-035	.03	5	.14	.06	·		
090	.04	.045	.035	.04		.05	1075		· 	<u>i</u>
001	.03	-04	.03	. 03		.017	.06			
092	.04.	.05	.04.5	.04	5	.065	.065			
093	.04	.045	.035	.03	5	121.	·035		ļ	
094	.03	.035	.03	.03	5	.045	.035			
c95	.03	04	.035	.03	5	075	.055			i
096	.03	,045	03	.03	5	.045	. 035			
091	.04	.04-5	035	.04	5	.06	.045	·		
OGE	.04	1045	.04	.04		.05	.065			
099	.03	.045	-04	.04		.045	.045		· 	·
100	04	.045	.04	-03		07	135			
TEST DATE	3-1-77	3-17-77	5-6-17	5:31-	11	'	6-29-17			<u>_</u>
TEST By	(Cop)		(Sec)	\Q\ \Q\ \Q\	•	(Sp)	(Sp)	. —		.



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CUSTO	MER'S NAME	• NASA	. · · .	S/0-704	-35622	· · · · · ·	SHEET 145	OF 188
TEST			10500		.c. P/N _ M8			, ,
Dissipa	tion facto	r @ 1KHz @	125°¢	ı	ST P/N			
		•		•	D. NO. 02			
TEST NO.	XT-1218-C	· ·		P/0	NO. NAS8	-32403		
	T T T T T T T T T T T T T T T T T T T	issipation	factor wit				:)	
S/N	Initial	After	After	After	After	After	1	
	D.F.	20	140	260	380	500		
		cycles	cycles	cycles	cycles	cycles		
101	.04-	.045	.035	.035	.045	.055		
102	.04	-04	.035	.035	.045	.08		
103	.04	.04	.035	.035	.05	035		
104	.04	-045	.04	04	./	.045		
105	.04	.05	.045	.045	.055	.06		
106	.04	.04	.035	.035	05	.05		
108	.04	-04.5	.035	.04	.095	09		
109	.03	.04	.03	.035	.04	.03 .		
110	.04	.045	.035	.035	44	.17		
111	.04	.045	.04	045	.045	23	. ,	
112	.03	.04	.03	.035	.045	.035		
113	.03	.ort	.03	.035	.04	.14		
114	.04	.04	.035	.035	.04	.04		
116	.03	.04	.03	.03	.075	.105		
117	.04	.045	1.45	6.5	1.75	.9	<u> </u>	
						. 7		
				•	· · · · · · · · · · · · · · · · · · ·			
			<u> </u>	,				
			·					
TEST	3-1-77	3-17-77	5-6-17	5-31-17	6-17-77	6-20.11		
TEST BY	17.8	3-17-77	(3)	(S)		(3)	·	



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CUSTO	MER'S NAME:	NASA		s/c	0-70	4-35622	St	HEET 146	OF 188
TEST:	oation fact	or @	LAB SUPVR		C.R.	C. P/N M8	3421/01-118	6R	, ,
10KHz		01 (-	ENGR.	V.	CUS	T.+P/N			
TEST NO	XT-1218-C		0.4.		PRO	D. NO. 0238	3G		
TEST TE	EMP. 25°C				P/0	NO. NAS8-	32403	i .	
	OLT. N/A		·		SPECI	FICATION:			
SPECIAL	мотеs: thermal s	hook oor T	p 1006		<u>.</u> ا	11 _C_92/21	, para. 4.7		
	to Air) 50		. 1000	•	-"	11-0-05421	, para. 4./		
	to +125°C,		cycle				•		
ACCEPTANC	E LIMITS:				EQUIP	MENT USED:	<u> </u>		
There	are no est	ahlished %	D.F. limite	for	l mp.	edance com	Mo arator G.	del No.	ECN 1331
	test condit		D.1. 111111C.	101			de capacit		יכני
	•						G.	R. 1413	
		•				,			
	•				.,				
Ì		•	;	ļ		•		. ,	
									
	Percent	dissipation	factor wi	th therm	na l	shock -55°(to +125°C		
S/N	Initial	After	After	After		After	After		
	D.F.	20 cycles	140 cycles	260 cycles		380 cycles	500 cycles		
·		Cycles	Leyeres	Cycles	-	Cycles	Cycles		
086	.15	.175	.18	.19:	5	.205	.215		
087	.15	.18	.175	195	5	.205	21		·
088	.17	121	22	.26		.28	.3/		
0.59	15	.185	.195	.2		12	,205		
090	.155	.195	.195	.22		.24	.255	·	,
091	./5	175	.175	.19:	5	.205	21		
092	.195	.245	.265	.31		.37	.42	· · · · · · · · · · · · · · · · · · ·	<u> </u>
093	.145	155	.18	.200	5	.205	.205		
091	.15	.115	.16	.19		195	,205		
095	.14	.115	.17	.19		121	.235		·
096	.14	.165	155	.18		.19	,21		
091	.75	.155	.2	123		1245	.115	·	- ·
098	.165	,21	.23	.25		.265	.31		
099	./5	.185	205	243	5	:25	,26		
100	.145	.17	165	1/85	5	12	.21		
TEST DATE	2.25.77	3-11-11	5:3-77	5-27	17	6-14-11	6-30.77		
TEST BY						[ang)			
<u> </u>		208		200		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Told	<u></u>	



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ST .		NASA or @ 10 KHz	 : @ 25°C	C.R	+-35622 I.C. P/N M83 ¹		SHEET 147 6R	<u> </u>
•				· I	ST P/N	QC	• •	
EST NO.	XT-1218-C		:	PRC P/C	DD. NO. 0238	-32403	<u> </u>	
		lissipation	factor wit				C) .	
s/N	Initial	After	After	After	After	After	1	T
. 1	D.F.	20	140	260	380	500		
<u>_</u>		cycles	cycles	cycles	cycles	cycles	 	
01	15	.165	.175	.18	.205	.205	 	
102	.15	.175	.17	.2/5	.22	.23	, , _	
103	.16	.175	.165	.205	.21	215		
04	.2	.225	.22	.26	26	.215		
05	.18	.22	.23	.265	.28	.29		
1060	./5	.165	1195	. 215	225	.33		
108	.165	R	.205	.235	.26	1.28		
109	.145	.160	.15	.175	.195	.115 .		
110	./5	.175	.185	,205	22	-22		
111	.165	.19	.195	.235	.26	, 3		
112	.15	165	155	.18	185	.19		
113	145	.160	155	.175	175	.//		+
114	.155			1 ' . 1		,		+
	1	175	1.6	.19	.165	.195		
16	.14	105	.16	.18	.19	.54		
119	155	.175	118	/ج,	.24	.225		
			· ·		 	· ·		
	 '			<u> </u>		<u> </u>		
	 	<u> </u>		 	<u> </u>	 		-
	<u> </u> '					· · · · · · · · · · · · · · · · · · ·		
	<u> </u> '							
	<u> </u>	<u> </u>			L	<u>. </u>		
			·		·	 		
							·	
					·			
EST .	2-28-17	3-11-77	5-3-11	5:21-17	6-14-77	6-90-11		
ST	, , , , , , , , , , , , , , , , , , ,	7	(P. P. P.)	(Sp)	(\$0)	(S. S. S. S. S. S. S. S. S. S. S. S. S.		



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TWX 910-343-6864

GENERAL DATA SHEET

CUSTOM	ER'S NAME:	NASA	_	s/	0-704-35622		SHEET 148	OF 188		
TEST:	ation fact		LAB SUFVEC		C.R.C. P/NM8			1		
10 KHz		.όr ω	ENGR.		CUST. P/N					
TEST NO	XT-1218-	·C	9.A. /		PROD. NO. 0238G					
	MP55°C		- Jul		P/O NO. NAS8-		1			
	LT. N/A			· .	SPECIFICATION:					
(Air t	thermal s o Air) 50	hock per T. O cycles I hour per	•		MIL-C-83	421, para.	4.7.9	·		
CCEPTANC	E LIMITS:				EQUIPMENT USED:		Model No.	FCN No		
	are no est est condit	ablished %	D.F. limit		Impedance com Precision dec Temperature t chamber Thermometer -	parator ade cap. est Statham	G.R. 1654 G.R. 1413 SDG-1	1331 1387 130 1588		
	Percent d	issipation	factor wit	h therma	1 shock (-55	°C to +125	°¢)			
S/N	Initial	After	After	After	1.2	After				
	D.F.	20 cycles	140 cycles	260 cycles	380 cycles	500 cycles		ļ*		
		 		 		-				
086	.88	-62	.53	.56		.54	<u> </u>			
087	.9	.57	.65	.56	, , , , , , , , , , , , , , , , , , ,	1.05		 		
088	.55	.59	· .58	1.6	63	1.94				
089	.54	.56	.53	.57		1,35		 		
090	.55	.57	.54	.57	.59	66		 		
091	.52	1.55	.51	.56	.65	1.15		ļ <u>-</u>		
092	.59	.66	.6	63	1.4.5	1./_	· · · · · ·	ļ		
003	55	.57	.69	.62	1.4.5	.59		ļ		
23-	.53 .53 .53	56	154	.62 .55 .56 .54	.62	.53	<u> </u>			
095	<u>.53</u>	.56	.53 .51	.56	1.15	.82		ļ		
076	<u>.53</u>	.55	151	1.54	.57	54	ļ	ļ		
097	1.54	62	.56	,59	.2'	.67				
008	.55	166	.57	.60	1.61	1.5				
das	.54	166 .57	157	.6	.59	1.0				
099	,52	.76	·57 ·52	.56	1.25	.29				
TEST Date	2-28-11	3-16-17	5-9-17	5-31-7	7 6-17-77	6-29-11				
TEST BY	(St)	(Sp)	(Sp)			S	<u> </u>			
	- \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	- /\$./		1 - XX	7	- \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \				

F-634-1



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TWX 910-343-6864

	MER'S NAME	: NASA	; · ·	s/0 - 7	04-35622	Sł	HEET 149	OF 188
TEST		- 0 10KH- 0		·	.R.C. P/N	183421/01-11	86R	
vissipa	ition facto	r @ 10KHz @	-55 C	c	UST P/N	<u> </u>		<u> </u>
	·	<u> </u>		· P	ROD. NO. 02	238G		
TEST NO.	XT-1218-C			Р	/O NONAS	3-32403	t	
	Percent d	issipation	factor wit	h thermal	shock (-55°	°C to +125°C) .	
S/N	Initial	After	After	After	After	After		
	D.F.	20 cycles	140 cycles	260 cycles	- 380 cycles	500 cycles		
101	.51	.55	.54					
	Į.	.56		.56		.84		
102	,55	1	,54	.65		1.25		
103	.51	.55	152	.63	16B	.62		
104	.56	184	.61	167	1	.66	<u> </u>	
105	.57	.607	. <u>చ</u> 8	.61		1.9		
106	.52	184	.52	.63	· ·	.68	·····	
108	,55	.76	.55	6	1.0	.94		
109	.50	.56	·52	1.65	.65	.75		
110	.53	.6	<i>-53</i>	.51	.75	.85		
111	155	,59	155	.59	.59	.91	· .	
112	.51	.55	.51	.54	1.35	.65		
113	.52	.56	.5	.54	.94	1.25		
114	.52	.61	.51	59	.6	.62		
116	.52	.56	15	.54		.74		
117	,52	.59	1.15	.66	18	.59		
		7	·					
				_				
-			· · · · · · · · · · · · · · · · ·			1	<u> </u>	
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·	· · · · · ·			<u> </u>		 		
			· · · · · · · · · · · · · · · · · · ·	 				
TEST		: -		ļ .		 		<u> </u>
DATE TEST	2-28-71	3-16-71	5-9-77	5-31-77	1 6-17-77	6-39-77		
BY	المروني	Q d'u			<u>Gar</u>	(2)		<u> </u>



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TWX 910-343-6864

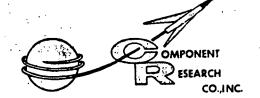
CUSTOM	ER'S NAME:	NASA	LAB SUPVACI	<u> </u>	704-35622		HEET 150	OF 188
	tion facto	r @ 10KHz			C.R.C. P/N _ M8	33421/01-118	6R	<u> </u>
			ENGR.	K	CUST. P/N			· .
TEST NO	XT-1218-0		Q.A. ()		PROD. NO02	238G		·
TEST TE	MP. 125°C				P/O NO. NAS	3-32403	<u> </u>	
TEST VO	DLT. N/A				SPECIFICATION:			
SPECIAL A					MIL-C-83421,	para. 4.7.	9	
		hock per T.	P. 1006		- "			
	o Air) 500	l Hr. per	cycle					
_	E LIMITS:	· pc.			EQUIPMENT USED:			
CCEPTARC					•		lodel No.	ECN No.
		ablished %	D.F. limit	s for	Impedance com			1331
this c	ondition.				Precision ded			
		·			Temperature t	.esi statna	m 304-1	130
* .	•			}	Thermometer -	- Marshall J	E-485	1588
							•	
	*		-					
						·		
	Percent	Dissipation	Factor wi	th Therm	nal Shock (-5	5°C to +125	°C)	
s/N	Initial	After	After	After		After		
	D.F.	20	140	260	380	500		
		cycle	cycle	cycle	cycle	cycle		
086	,57	,215	.155	.18	.22	.24		
081	.58	1.205	./55	.17	· .	.28		
OBB	.21	.3/	215	124		.49		,
080	.19	.205	.165	.175		.43		
090	,19	1225	.165	.2/		.52		
	.15	105	.15	./5		.4-3	·	
091	,24	,3	.255	-3	.44	. 4-4		
093	.19	.315	19	./85		.165	·	· ·
	,15	.19	.145	163	_ r /	1 '		
001	./5	.195	.16	./8		.165		
095	.14			[.36			
096		122	.14	./5		175	<u> </u>	
097	.16	,235	165	.213		1245		
099 099	.19	.27	,215	.24		.48	· · · · · · · · · · · · · · · · · · ·	
	.16	.235	.16	,22	• •	.3		
Off	12	.215	./5	170	5 .27	. 8		
100	./5	1	1			I		
100 TEST -	3-1-77	3-17-77	5-6-77	5:31-	716-17-77	6-29-11		
IDO TEST DATE TEST BY		3-11-77	5-6-17	5-3/-		6-29-17		



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est Dissipa	ation facto	or @ 10KHz @	+125°C	cus	ST P/N	3421/01-118	86R	
		·	 	PRO	D. NO. 023	8G		
EST NO.	XT-1218-0					-32403		
S/N	Percent of Initial D.F.	After 20	After 140	After 260 -	After 380	After 500	<u>C)</u>	
		cycles	cycles	cycles	cycles	cycles		
101	.15	.205	.145	.175	.235	.34		
02	.16	2	.15	.19	.26	.55		ļ
103	-2	1.2	./5	185	.27.5	.21		
04	.21	.265	.21	.24	13	13		
105	-22	.275	.225	.265	.35	.4		
106	.16	.205	./55	.105	.3	.31		-
105	.19	.26	.19	.22	.63	.59		-
109	.14	.185	.125	17	.195	.14	ļ .	-
110.	.16	.225	.16	.165	.77	149		
11	.18	.245	.18	,215	.25	.62		
112	1/5	-215	./35	.15	.38	.195		ļ ·
113	.14	.205	.125	.145	.22.5	1.0		ļ
114	./5	195	.14	.165	1195	. 225		ļ
116	.14	.215	.13	.155	.52	.54		-
117	16	-24	.36	1.25	.89	.66		
				·		,		
								J
			·		<u> </u>			
	· .							
			·					
·								-
EST ATE	3-1-77	3-17-27	5-6-77	5-31-71	6-17-77	6-29-71		1
EST	133	12	72	ار ا	/ ev	1		



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CUSTOM	TERS NAME:	NASA	<u>. • </u>	S/0-	704-	35622	Si	HEET 152	OF 188
TEST:	••		LAB SUPVR.	23°1	C.R	.c. P/N M8	3421/01-118	6R	, .
E.S.R	.		ENGR.		4	ST. P/N			
TEST NO	- XT 1218-C		Q.A.	/> ·	PRO	D. NO02	38g		
	MP. 25°C			<u> </u>		NO. NAS8-		<u> </u>	
	DLT. N/A	-	1		SPEC	IFICATION:	•		· .
SPECIAL N]				
	.thermals :oAir) 50	hock per T.	P. 1006	•	-				
-55°c	to +125°C	(1 Hr. per	cycle)						•
l .	E LIMITS:	· · · · · · · · · · · · · · · · · · ·		·	EQUI	PMENT USED:		···	
· ·		-L1:-L-J F	c D 1:-':-	- £	Ι.	•	Clark Han		N No.
	est condit	ablished E. ion	S.K. IIMITS	s ror		.K. meter - le Assembly		s-273 11 s 27375 11	_
"""	CSC COMATE			•		i c rissembi	, oldik nes	<i>3 -1313</i>	
						:			
						,	•		
		•			'				
ļ									•
-					<u> </u>	- -			**************************************
		thermal sh				1		ı————	
S/N	Initial E.S.R.	After 20	After 140	After 260		After 380	After 500		
	<u>.</u>	cycles 1		cycle	s 🔿	cycles	cycles Ω		
601	[···							· .	
086		.10	13	15		.16	.16		
087	.15	.15	.18	.14		.15	.75		-
088	.//	.//	./3	.14		.14-	.14		
089						1			.=
090	.12	./3	15	18		.20	.21	, <u></u>	
091	.10	.11	./2	.14		./5	.38		
003		.12	- 122	•			.14	•	
093	.//	11	./3	.15		15	.15		
005	.10	,,,	.12	.14		.16	.17		
095	.10	.10	.//	.13		.14-	./5		
091	./2	12	./5	.18		.21	,22	· ·	
098	.14	.15	.18	,21		.24	.26		
049	,12	113	.16	.19		.20	.20		
100	.11	.//	.11	14		15	.15		
TEST DATE	228-17	3-11-77	5-4-77	6-2-	17	6-14-17	6-29-77		·
TEST BY				10 - N 1	-/-	(SA)	(2.50)		
لسستا	- CS-C/	(() () () () () () () () () ()	وكرا	}	- \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		<u> </u>	L



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CUSTON	MER'S NAME:	NASA			4-35622		HEET 153	JF 188
E.S.F	R. @ 25°C		•	1	.C. P/N T P/N	3421/01-118	OO K	
					D. NO. 0238			***
EST NO.	XT-1218-C		;	P/0	NO. NAS8	-32403	1	
	T T	th thermal	shock (-5					
S/N	Initial	After	After	After	After	After		
	E.S.R.	20	140	260	380	500		
	12	cycles()	cycles Ω		cycles <u></u>	cycles/2		· · · · · · · · · · · · · · · · · · ·
0/	.//	.//	.12	.14	.16	.17		
02	.//	.//	12	.16	.16	.17	· .	······································
03	.//	.11	.13	15	.16	15		
04	.15	.16	,17	.18	.21	.21		
10.5	.14	:11	.18	.22	.23	.23		
1042	.10	. //	./3	.16	.17	.17		
108	.13	,14	.16	.19	-21	121		
109	.10	.09	.10	.12	.13	.//		
110	.1/	.11	./3	.16	.16	16		
///	.12	13	.15	.18	.31	.24		
112	.//	.10	.10	.13	./3	.12		
113	.10	.10	.10	.13	./3	.12		
14	.10	.10	.10	12	./3			<u> </u>
		,10) 1			13		
116	.10		.10	./3	./5	1.02		
1/1	.//		.13	.16	.16	.75		
								
· · · ·							·	
 							·	
	·							·
					·			
ST	2-28-11	3-11-77	5-5-77	6-2-77	6-15-77	6-20-11		
ST			Ça,	(Sp.)	<u>~ / ~ / / </u>	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		



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CUSTON	MER'S	NAME:	NAS/	4			हुर् _ष s	/0 704	-356	22		Sł	HEET 154	OF 188
TEST: Se	eal te	est			LAB	SUPVR		C.F	.C. P	/N _ M8	3421/0	1-118	6	
(1	fine 1	eak t	est)		ENGR	./0	V			/N				
TEST NO	· XT	1218-	С		Q.A.	77		PRO	D NO	0238	3 G	• •		
TEST TE			· · · · · · · · · · · · · · · · · · ·			XIII	-			NAS8-	32403		<u> </u>	
TEST V		I/A		-				SPEC	IFICAT	ION:		_		
SPECIAL		1.				206		MI	L-C-	83421,	para.	4.7.	5	
Normal (Air t			nock p	oer i.	P. I	006	•	-	• ·		•		۲ .	
			/1	• .		,	-			•				
500 CY	E LIMI	25 C	(I HK.	. per	cycı	<u>e) </u>		EQUI	PMENT	USED:		Mod	el No.	ECN No.
Leakag		•				•		Fi	ne 1	eak det	ector		•	651
						٠.						24-	120B	
1×10 ⁻⁶	AIM	1/ ÇC/ S	ec .				•		٠.					
			٠		•	•		· .		•				•
					•								•	
							•			• •				
	•													
	Init	ial	Afte		Aft	er .	Afte	r į	Aft	er	Aft	er		
S/N	 		i :	cles	ļ		1	•	Ĭ .	cycle	•	cycle		
3/14	1×10	- 6	1x10	-6	1x1	0-6	lxl	0-6 .	lxl	0-6	1×10	- 6	·	•
	Pass	Fail	Pass	Fail	Pass	Faii	Pass	Fail	Pass	Fail	Pass	Fail		
086	-		/		. /	•	/				,			
087	1 R		1		1		A	Ţ ·	1		1			
088								1 .			,			
089										1		X		
000	Γ										4			
091						1		1			1			
002						1		1				: Į		
003														
094								†					· · · · · · · · · · · · · · · · · · ·	
005			- -	<u> </u>		1		İ						
006					\Box	1	 	ĺ	1					<u> </u>
097						1		†	+	1				-
008	 	 			 	+	1.	†		†				
				 				 	 	 		X		-
099				 	 	+	 							
100	-		1	l	-	ــــــــــــــــــــــــــــــــــــــ	-	1	 	1				
DATE	2-28		3-16	-11	5.1	0-11	6.2	-17	6-1	5-17				
TEST BY		<u>श्</u> रो			L			<u></u>	<u> </u>	(S)		7		
	TV.	T		<u> </u>	$\overline{}$	AS. I	Z 7.	57		V27	(7)			



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CUSTOM	ER'S	NAME:	. NA	ιSΑ				.• •		s/o) 70)4-	356	522		٠.	s	HEET	- 155	OF	18	8
Seal t (Fine			·'=					-				cus	T: I	P/N	M83 ¹		-1186	R				
TEST NO.	XT-1:	218-C	-												NAS8-			1 .				
	J	ial	Af	te	r vc.	A 14	fte	er cyc	A 26	fte	r		7	\ft	er		er			- /		
S/N	1x10	- 6	1x1	0-	6	1x	10	- 6	1	<u>×10</u>	-6	- -	17	(10	-6 . Fail	<u>1x10</u>	₀ -6					
101	rass	Lall	ras	S	<u> </u>	Pa	SS	rall	Pa	<u>55</u>	Fal		غ <u>ح</u>	ISS /	. rali	Pass V.	rall	:		十		
			1						-								X			1		
103		·		.					<u> </u>		· ·			·			×			+		
104															,	1				1		
105	i															1				+-	•	
11%	;																			1		
108					·	·			. 1								X					
109												·		·		-	7.					 3-
110					•		٠.			1				٠		1						
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113																	よ	;	-			
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TEST DATE	295-		3./			5-1	10	-77	6-	2	<u>-77</u>	7	6	-/5	-77	7-1-	27			\perp		
TEST BY	200	>	<u> </u>			_	Cg	<u> </u>			<u> </u>		_		}	\$3\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	<u>}</u>					

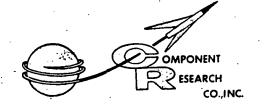


TEST REPORT SUMMARY Thermal Shock Air to Air 500 Cycles, -55°C to +125°C

TEST NO.

REPORT NO. XT-1218-A

CO.,INC.			PAGE	156 OF	188
PROD. NO. <u>0236G</u>	c	USTOMER NASA	, MARSHALL S	PACE FLIGHT	CENTER
LOT		USTOMER P/N	· ·		 :
LOT SIZE 30	C	USTOMER P/O_N	IAS8-32403	·	. , .
C.R.C. P/N M83421/01-1090R		.R.C. S/O7	04-35622	·	· ·
DATE COMPLETED July 1. 1	1977				· .
TEST		REQUIREMEN		ETHOD AGRAPH	ACC REJ
Insulation Resistance		3.11	4.	7.7	29
Capacitance		N/A	4.	7.8	29
Dissipation_Factor		3.13	4.	7.9	29 1
E.S.R.					29
Seal Test		3.9	4.	7•5	27 2
-					
QUALITY CONTROL			DATE		
	SHIPPING	DATA			
ORDER #	DATE SHIPPED	QTY SHIPPED	INVOICE #	QTY ST	OCKED
					<u>-</u> ·
				<u> </u>	
	N				
	170				
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Custom	<u>er's Name:</u>	<u>NASA</u>		<u> </u>	14-35622	SI	HEET 157	OF 188
TEST:	sulation Re	sistance	LAB SUPVR	37	C.R.C. P/NM8	3421/01-10	90 R	
(Te	rminal to 1	erminal)	ENGR.		CUST. P/N			· .
TEST NO	. XT 1218-A	\	Q.A.		PROD. NO. 02	236G		
	MP. 25°C				P/O NO. <u>NAS8</u> -	-32403	1	
TEST VO	DLT. 30VDC	•		. s	PECIFICATION:			
SPECIAL P		•	_			_	•	
	1 Thermal S			2500	-MIL-C-83421	, Para. 4.	7.7	
	. per cycle		55°C to +12	25 6				
1	E LIMITS:		· · · · · · · · · · · · · · · · · · ·	le	QUIPMENT USED:	<u>. </u>		· · · · · · · · · · · · · · · · · · ·
				1			lodel No.	
			negohms min thermal sl		D.C. Micro V / I.R. Test rac			1480 647
			mits for m		D.C. volt ohm			1357
	ge current (Battery pack		N/A	
				.				•
			÷					
	•	•	•					
	1		E WITH THER				·	 ; ·
S/N	Initial (After 20	After 140	After 260		After 500		<u>.</u>
	1.8.	Cycles	Cycles	Cycle		Cycles		
021		3	2	2		2		
022		4	2	3	2	2		
C23	5	4	. 2	3	2	2		
C24	3	6	2	3	2	2		
025		-3	2	2	3	2		
126		5	2	3		5	ļ	· ·
027	3	4	3	_ تی _	2	6		
039	3	5	3	4	2_	2		
030		.5	2	3	2	/		
C31.	2	4	2	2	2	/ .		
032	22	4	2	2	2	/		
C33	7	: 3	2	3	2 2	だ.		- ·
034	2	4	2	3	2	2		
035	3	6	3	3	2	\mathcal{Z}		
036	. <i>3</i>	4	3	2	2	2	·	
TEST	2-24-11	3-11-11	5-4-11	5-27-7		6.29.77		
TEST BY	\triangle	QNE		(3)	Q ev	(CAC)		



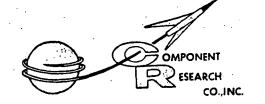
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GENERAL DATA SHEET

Custome	er's Name:	NASA	S.	'0 - 704-35	622	<i>.:</i> \$	HEET 158	of 188
200		sistance @				33421/01-10		,
li .	erminal to				ST P/N		•	
	·	·		! PR	OD. NO. 02	236G		
TEST NO.	XT 1218-A		: 	P/0	NO. NAS	8-32403	!	
	INSULATI	ON RESISTAN	ICE WITH TH	ERMAL SHOC	K	(-55°C to	o +125°C)	
S/N	INITIAL I.R.	AFTER 20	AFTER 140	AFTER 260	AFTER 380	AFTER , 500		
	1.1	Cycles	Cycles	Cycles	Cycles	Cycles		
037	3_	4	2	3	2	2		
038	/	4	3	3	2	1		
C39	//	3	2	4	2	. 2		
040		3	3	2	2	2	·	
041	4	5	z	3.	2	,		
042	5	4	ã	2	2	/		
043	9	3	2	4	2	/		
044	/	4.	2	6	2	2		
045	11	4	2	5	2	/		
046	3	- 4	z	R	2	2		
047		3	2	6	2	2		
048	æ	CDEN						
049	/	4	2	2	2	2		
050	3	4	2	2	2	2		
051	6	4	4	1	2	2		
				,				
							·	·
					<u> </u>			
	· ·							
								- '
								,
TEST DATE	2-24-11		5-4-17	5:27:77	6-14-77	6-29-17		
TEST BY	200	De ar		10 mg	اليامية)	CACI		

F-634-2



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Custom	er's Name:	NASA		5/ <i>90</i> 5 70)4-3	5622		SHEET 159	OF 188
TEST:			LAB SUPVR.	EF	1	.c. P/NM			, .
•	ation Resis		ENGR.	1	4	ST. P/N			
	inal to Ter		Q.A.	<u> </u>	I .	OD. NO. 023			
	MP55°		- Co		1	NO. NAS		:	
<u> </u>	DLT. 30 VI					IFICATION:	0 72-107		
	NOTES:		<u> </u>						•
		Shock per T				MIL-C-8342	1, Para. ¹	4.7.7	
1 .	•	500 Cycles,	-55°C to +	⊦125°C	ļ.				
	. per cycle	≘)	_					٠.,.	
ACCEPTANC	E LIMITS:				EQUII	PMENT USED:	•	Model No.	ECN No.
There	are no est	ablished li	mits for m	aximum	D.C	. Micro V		H.P. 425A	-
	e current (I.R	L test rad	c (CRC None	647
			,	•				Simpson 260	
		•				mberature te mber	est Stati	ham SD9-1	150
		•					Mars	hall J E-489	1588
		,	•		Bat	tery pack		N/A	
						,			
	INSULATIO	ON RESISTAN	CE WITH THE	ERMAI CL	וטרג	(-55°C to	+125°C)	<u> </u>	
S/N	Initial	After	After	After		After	After	 	
	1.R.	20	140	260		380	500		٠.
		Cycles	Cycles	Cycle	25	Cycles	Cycles	•	
021	5	8	6	9		5	. 7		
022	5	8	8	7		5	4		
023	6	. //	. 4	9		5	8		
024	. 4	12	_5_	. 11		5	//		
025	10	10	5	6	·	5	6		
036	3	12	4	11		7	//_		
021	8	11:	5	13		8	10		
029	4	9		11		7	7		<u> </u>
030	5	iv	4	- 3		9	9		
031		9	<u> </u>	9		2.	8		
032	. 5	11	- చ్	9		6	15.	<u> </u>	
233	4	11	8	12		5	21		
034	5	12	.5	10		6	13	· ·	
035	5	6	_6	11	<u> </u>	2	10		
036	7	12	15	16		5	13		
TEST Date	3-1-11	3-14-11	5-5-17	5-3/-7	1	6-16-71	6-29-11		
TEST BY	्रिल	[CAC]	Cric	13		(CAC)	CAC		
	- \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	F77	65	140		· · · · · · · · · · · · · · · · · · ·	- 		



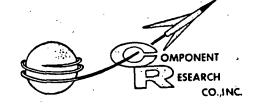
ordern som to the sold of the contract of the sold of

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	ation Resi	stance @ -	55°C	cus	T P/N D. NO02			
EST NO.	KT 1218-A	· · · · · · · · · · · · · · · · · · ·	:	P/0	NO. NA	s8 - 32403	1	
				HERMAL SHOC		to +125°C)		,
S/N	Initial I.R.	After 20 Cycles	After 140 Cycles	After 260 Cycles	After 380 Cycles	After 500 Cycles		
237	5	13	.8	10	6	10		
038	3	/3	5	g	. 8	9.		
039	4	11	10	10	9	13	·	
040	4	18	5	11	6	16		
24-1	వ్	12	5	17	6	11		
042	6	8	10	7	35	25		
143	3	5	30	5		5		
244	2	10.	10	క	12	12		
045	5	12	9	7	10	13		
046	3	7	5	10	6	7		
047	3	11	6	13	10	15	•	• .
048	2	OPEN						
049	4	10	3	10	9	11		
0.50	5	8	3	. 2 .	14	9		,
051	6	7	4	2	8	9		
					·	,		
								•
				-	7			
								-
				·				· · · · · · · · · · · · · · · · · · ·
						<u> </u>		
			:			· ·		
EST	3-1-77	3-14-77	E-E-1	5-31-17	6-16-77	(.00 47		
EST	7.2	J-/7./7	3-3-77	2-11-17 12	(GRC)	6-29-11 (Sign)		-



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Custor	mer's Name:	NASA	·· 	S/300 71	04-35622	S	HEET 161	OF 188
TEST:	lation Resi	stance	LAB SUPVR.		C.R.C. P/N	M83421/01-	1090 R	
	minal to Te		ENGR.	1/	CUST. P/N			
TEST NO	XT 1218-	-A	0.A.		PROD. NO	0236G	· · · · · · · · · · · · · · · · · · ·	
TEST TE					P/0 NO	NAS8-32403	1	
TEST V		DC			SPECIFICATION:			
SPECIAL NORMA		Shock per T	P-1006		•		•	
		00 Cycles,		125°C	MIL-C-8342	21, Para. 4.7	. 7	
(1 hi	. per cycl	e)					. 4	•
ACCEPTANO	E LIMITS:	<u> </u>		<u>:</u>	EQUIPMENT USED:		M 1 1 M	
1500pA	maximum o	r 12,000 me	gohms minir	mum *	D.C. Micro	V Ammeter	Model No.	ECN No. 1480
After	500 cycles	air to air	thermal si	hock			CRC None	647
		ablished li	mits for ma	aximum		hm meter Sin	1	1357
Геакад	je current (w T127 6	,		emperature	test chamber	otham SD9-1	130
					Thermometer	- Marshall		1588
					Battery pac	k ·	N/A	
					· ·		•	· · · · · · · · · · · · · · · · · · ·
	INSULATI	ON RESISTAN	ICE WITH TH	ERMAL SI	10СК (- 55°С	to +125°C)	•	
S/N	Initial	After	After	After				
	I.R.	20 Cycles	140 Cycles	260 Cycle	1 -	500 Cycles	·	
· ·			Cycles	Cycle	s cycles	Cycles		<u> </u>
021	21	4	38	2.0		10		
022	.4	71	40	15	14	100		· · · · · · · · · · · · · · · · · · ·
023	27	6	50	14	24	18		<u> </u>
C24	66	43	45	24	33	32		
035	24	6	65	33	14	130	<u> </u>	
026	19	19	55	25	3/	36_	 	<u> </u>
0.27	4	13	45	37	4.7	31		
024	33	47	43	17	68	15		
030	25	4	40	15	10	10		<u> </u>
031	18	8	45	27	11	28	<u> </u>	
032	160	5 ë2	60	14	25			
033	10	20	35	30	53	50	<u> </u>	-
0.34	29	22	45	20	29	29		
035	100	150	45	25	1	27		
036	69	15	43	50	25	28		
TEST DATE	2-28-11	3-14-77	5-6-77	5-31-7	7 6-16-7	7 6-28-17	-	
TEST BY	(3)	(QQ)	(Pa)	ي والم				
	- (x-;- 6)		- (X-(-C))	- (((; -				



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(Ter	minal to T		· · · · · · · · · · · · · · · · · · ·	CUS PROI	.C. P/N <u>M8</u> T P/N	3421/01-10 6G		OF 188
EST NO.	XT 1218-A				110.	s8-32403	' ====================================	
s/N	INSULATIO Initial I.R.	N RESISTANO After 20 Cycles	After 140 Cycles	After 260 - Cycles	After 380 Cycles	After 500 Cycles		
237	E 1	12	45	92	20	31		
038	85	12	45	უ	21	27		
239	23	11	30	24	23	26		
040	4.	··· 6	30	23	60	240	· .	· .
241	20	32	35	20	23	30		
142	15	30	35	18	13	53	,	
743	35	45	25	27	27	.21		ļ
144	19	73	35	15	10'	33		
745	<i>3</i> ,3	17	38	25	30	115	<u></u>	
246	21	85	30	35	32	40	1.	ļ
047	18	17	20	28	24	28		
048	17.	OPEN	· '					
049	11	36_	30	43	34	15	<u> </u>	ļ
050	115	15	50	21	31	8		
051	<u>3</u> 3	17	180	45	8	32		ļ.
		<u> </u>		,				
								ļ
· .				· · · · · · · · · · · · · · · · · · ·			<u>, </u>	
			,					<u> </u>
		·					·	ļ
		· ·						
	·	· · · · · · · · · · · · · · · · · · ·				•		
	:			,			<u> </u>	ļ
								
EST								<u> </u>
ATE	2-28-11	3-14-11	5-6-17	5-31-17	6.16-77	6-28-11		



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GENERAL DATA SHEET

ORIGINAL PAGE IS OF POOR QUALITY

Custo	ner's Name:	: NASA	<u> </u>	<u>√</u> 0 704-	-3562	2	S	HEET 163	of 188
TEST:	pacitance [rift	LAB SUPVE	37	C.P.	C. P/N M8	3421/01-10		
	th Thermal		ENGR.	1	4	T. P/N	<u></u>		
TEST NO	XT-1218-A	<u> </u>	Q.A.		PROD. NO. 0236G				
TEST TE	0-	<u>· </u>	- Ju	4			NAS8-32403	. 1	
TEST VO			†	• •		FICATION:			
SPECIAL N			- 					- 0	,
		Shock per 500 Cycles,		⊦125°C	_ M	IIL-C-83421	, Para. 4.	7. 8	
	r. per cycl	le)	-		1			•	
ACCEPTANC	E LIMITS:				EQUIP	MENT USED:		lodel No.	ECN No.
.009uF	to .011uF	•	•		Impe	edance comp	•	.R. 1654	1331
		air to air				cision deca	ade capacit		
		ablished %		e drift	:			i.R. 1413	1387
	TOT THIS	test condit	1011		ļ. ·				
	•	•							
·							•		•
					1				•
	DEDCENT (A DA C LTANCE	CHANCE MI	CU TUEDM	401 C	110CK / EE	°C to 125	° c \	
0.401	Initial	APACITANCE After	After	After		After	After	- C) 	1
S/N	Cap. in	20	140	260	İ	380	500		
	uF,	Cycles	Cycles	Cycle	25	Cycles	Cycles		
031	.009868	t. 0.35	1.01	4.03	3	t.025	+185		
022	.009788	-02	/	-09.	5	-185	215	. ,	
	.009912	1.005	-005	-000	- 1	t. 635	t.005		
024		0.00	-04	7150	5	-19	-205		
025	.009890	r. 035	-175	+.00	5	-025	-035		
026	000030	-105	-015	- 00	5	t. 02	+045		
027	.009945	<i>t.</i> /	+14	7.215	5	1.27	+32		
029	.009138	0.00	023	x095	5	7.81	+.89		
030	000598	005	1.04	+.02		-04	0.00		ļ
031	.009800	1.015	-03	-06	5	-//	-14	ļ	
032	.009169	T.005	-045	- 000		03	-02		
C33	009839	-005	0.00	£013	- 1	+.055	-02		-
034	.009718	-015	005	-103		-12	-17		
035	009803	t.045	-045	-11		7/3	-17		<u> </u>
	009 785	t.02	-075	-07		-095	-005		
TEST Date	2-24-11	3-11-77	5-3-11	5-27-	.77	6-14-11	6-29-77		
TEST BY	CAC	(00)	(30)	133		()	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	•	



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ORIGINAL PAGE IS

OF POOR QUALITY GENERAL DATA SHEET Customer's Name: NASA s/0 - 704-35622 SHEET 164 OF 188 M83421/01-1090 R C.R.C. P/N _ Capacitance Drift with Thermal Shock CUST P/N 0236G PROD. NO. NAS8-32403 TEST NO. XT-1218-A P/0 NO. PERCENT CAPACITANCE CHANGE WITH THERMAL SHOCK (-55°C to +125°C) S/N Initial After After After After After Cap. in 20 140 260 -... 380 500 uF Cycles Cycles Cycles Cycles Cycles 000888 -. // <u>031</u> -. 02 -OB5 -005 <u> 707</u> 1.045 +.035 -01 4.04 +085 009877 703 7005 -015 009916 705 1.005 -14 <u> 7015</u> 000634 -125 -01 -015 -155 -275 -235 010001 1.005 -//5 042 -19 COGREGO -055 -00 -14 043 T.C3.5 -05 704 <u> 7065</u> -07 1025 -025 701 +015 <u> +.175</u> 045 -155 -.065 --015 7/35 -015 -095 t.005 -.15 7255 -055 -*035* 1015 -02 7055 -015 ODEN 049 1.01 -045 -035 -055 -09 +055 050 -015 -105 7085 000686 -075 <u>-065</u> 051 CO845 0.00 -12 -005 -035

TEST DATE TEST



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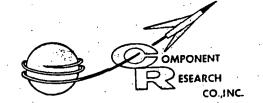
Custo	mer's Name	: NASA	S,	/00= 70	4-35	622	SI	HEET 165	OF 188
TEST:	acitance D	rift with	LAB SUPVR.	Z	C.R	.C. P/N	M83421/01-1	0 90R	
1	rmal Shock		ENGR.	1	4	T. P/N			
TEST NO	XT-1218-/	Δ	9.4.	<u></u>	PRO		0236G		· · · · · · · · · · · · · · · · · · ·
TEST TE			- Chi		1	NO	NAS8-32403	1	
TEST VO	OLT. N/A		1 .		SPECI	IFICATION:			
SPECIAL N			_		1				
		Shock per T 00 Cycles,		12500	-	MIL-C-8342	1, Para. 4.	7.8	
1 ?	. per cycle		-55 6 10 +	125 C		•			
ACCEPTANC	•	 	 		EQUIP	PMENT USED:	`	·	
_,			:::::	- • •	ľ			odel No.	ECN No.
		ablished in e drift lim				edance com cision dec	parator G ade G	.R. 1413	1331 1387
	ondition					acitor			. 507
						perature t			120
	•					mber - Sta	tham SD9-1 Marshall J	F-485	130 1588
1						·	riar strain o	L 10)	, 1,000
Ì				•				-	
	PERCENT	CAPAC ITANC	E CHANGE W	ITH THE	RMAL	SHOCK (-	55°C to +12	5°C)	
S/N	Initial	After	After	Aft		After	After		
	Cap. in	20	140	260		380	500		' .
	uF	Cycles	Cycles	Сус	res	Cycles	Cycles		
021	.009696	t.105	+.13	+18	5	165	19		<u> </u>
022	.009617	T.11	:02	-00.	5	-215	-26		
023	009748	t.[]	+.1.35	+5-	₹	1.045	-0.3.5		
024	.009608	1.075	+.07	-00	55	21	-36		
1235	009134	1.08	+ 035	+.04	15	-12	-205		
026	009162	1.095	+.065	1.08	35	-01	-03		<u> </u>
037	.009770	1.005	+.13	7.30	6	+.25	1:31		
	009563	+16	1.011	1.20		+ 92	15		
030	009732	1.165	+.195	1:15		+.115	-035		·
1231	.00635	•	1.005	1.04		21	733		·
1 1	003592	1.125	1.09	1.24		1.085	-005		
233	009676	+.13	4.14	1.24		03	-160		
	xq545	+.035	+.025	+,12	i	-,135	-89		
t I	.009620		015	4.06		7085	21		
	009627	1.075	1.025	4.02		-140	-95		
TEST							,		
TEST (3-17-77	3-14-71	5.5.77		~ /	6-16-17	6-27-77		
BY	203	(200 t)	Colo	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	7	CRC	<u></u>	<u></u>	<u> </u>



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	er's Name:	NASA	s/0	704-35			HEET 166	OF 188
TEST Capa	citance Dri	ft @ -55°C	with Therm	na 1 C	R.C. P/N M8	3421/01 - 109	OR	, ,
Shoc	k	•	•		JST P/N		 	
<u> </u>	· · · · · · · · · · · · · · · · · · ·	·			PROD. NO. 02	~ ~	· `	
TEST NO.	XT-1218-A		•			AS8-32403	· · · · · · · · · · · · · · · · · · ·	
	<u> </u>	APACITANCE		· · · · · · · · · · · · · · · · · · ·		55°C to +12	5°C)	·
S/N	Initial Cap. in	After 20	After 140	After 260	After 380	After 500		
	uF	Cycles	Cycles	Cycles	_	Cycles	: 	
037	.009719	1.09	t.065	+.085	-08	7.185		
1 /	.009705	<i>†.13</i>	t./35	+.15	+.11	70/		
1	.009145		4.02	1.055		38		
1 2	.000461	+. 245	1.07	4.1.3	085	-22		
041	009824	7.47	705	-11	- 22	- 45		
	.00.96BH	+.075	1.015	t.03	-16	-29		
	.cogreb	1.15	+03	1.085		-14		
044.		+ ://	t.08	1.095		733		
1	.000820	1.095	+015	-025	1	-3		
	.00953	+.09	-005	-035	-26	-46	,	
049	.009741	1.075	-155	+15	12	-44		
048	1 / F			·			:	
049	.0091186	1:09	-015	t.065	7.085	-18		
050	.000720	+.195	<i>-03</i>	-05	/	-56		
C51	coals	+ 307	1.01	-015	-18	-33	•	
				_				
·							·	
	·							
								-
-								
TEST	3-1-77	3-14-77	5-5-77	5.31.77	6-17-17	6-27-71		
TEST BY	(Pe) / /	,	30	CAC	Coc	CRC CRC		
	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Can			-1-/		L.,	1



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Custom	mer's Name:	NASA	S	/0 - 70	- 4-35	622		UCCT 167	OF 188
TEST:			LAB SUPVE 23	9	, 	· · · · · · · · · · · · · · · · · · ·	33421/01 - 10	HEET 167_	UF 100
	citance Dr	ift with		ـــرا	4		33421/01-10	MO IV	
	mal Shock		ENGR.	Z		ST. P/N	0236G		
TEST NO	. XT - 1218	- A	Q.A.	<u> </u>	1				
TEST TE		·					NAS8-32403		
TEST VO					SPEC	IFICATION:		•	•
SPECIAL P	-							- 0	•
		Shock per T 00 Cycles,		12E°C	-	MIL-C-8342	21, Para. 4	7.8	•
	r. per cyc	•	-55 6 60,+1	125 6	ĺ	• '			
	E LIMITS:				FOULE	PMENT USED:			•
			• • •	•	1			odel No.	ECN No.
		ablished in e drift lim				edance comp cision deca		.R. 1654	1331 1387
	capacitance ondition	e atir im		15		acitor	iue u	.N. 1413	1307
			. `.	: .		perature te	est Statha	m SD9-1	130
			•		cha	mber		•	oċ
					The	rmometer -	- Marshall	J E-485	1588
ļ			•		l		•		,
				•					•
,	PERCENT	CAPACITANC	E CHANGE WI	TH THE	RMA L	SHOCK	(- 55°C to	+125°C)	
S/N	Initial	After	After	Afte	er.	After	After		
	Cap in	20	140	260	-	380	500		, ,
	uF	Cycles	Cycles	Cyc	les	Cycles	Cycles		
021	009918	005	-005	1.02	3	02	//		
022	000808	1.01	-015	-03	<u> </u>	09	-26		
023	.00951	-005	702	-04	5	-14	-31		
	009833	-025	-04-5	-11	5	7/05	-36		٠,
1	000041	-01	0.00	-04		7.165	-34		
	000000		-055	-//		-085	-16		
027	009986	1	+.155	+.21		+.27	+185		
029	009787	005	1.04	· + 5		+1.25	<i>+.</i> 85		
030	.000043	-015	+:035	-0		-13	-225		
031	.00084-1	-05	-04	70	75	7/3	731		
032	.009820	-025	-055	-0	95	7//	-26		
<i>a33</i>	.009868	-045	-0B	-//		-185	-34		
034	.009779	-025	-045	7/1	· ·	7/35	-36	· .	·
035	09865	F035	-105	-2	•	7 3	-4		
036	.000829	-02	-05	7/	3	717	-225		
TEST Date	2-28-71	3-14-77	5-6-77	5:3/		6-16-11	6-26-11		
TE S,T BY	(Carl)	Can	(GC)	Ç _{\$} c		(Sec)	/ <u>८</u> §३\		
	- C7 /-		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		, , 		/ FTT \		



Phone (213) 829-3615

TWX 910-343-6864

Custom	er's Name:	NASA	\$/0	- 704-356	•		HEET 168	OF 188
	citance Dri k	ft @ +125°(with Ther	CUS	.c. p/N <u>M83</u> ST P/N	·	O R	
EST NO.	XT-1218-	 A	: .	1	NO. NO. 023	16G 58-32403	1.	· · · · · · · · · · · · · · · · · · ·
		CAPAC I TANCE	CHANGE WI	TH THERMAL		5°C to +12	5°¢)	
S/N	Initial	After	After	After	After	After	<u> </u>	
	Cap in uF	20 Cycles	140 Cycles	260 Cvcles	380	500 Cycles		,
?37_	.009932	-015	-os	-06	Cycles:	-19		
238 238	.009929	+.015	t.025	+055	4.015	-/3		
3a	001945		-015	7.05	-16	-31		
	009681	T055	-065	7085	7.16	-24	,	
741	.010022	-015	-075	-09	-115	-:39	,	
.42	009895	-00.5	T.02	1.015	//	-3		
743	.009919	-005	0.00	-015	7095	-24		
144	coggeo	-025	055	-04	-045	-175		
45	.010006	t.01	t.03	+06	4.015	-09		
746	009954	+.005	-004	-015	115	728	: .	
47	009938	-:01	1.07	+.29	4.3	-16		
48	0102+6	CPEN.						·
49	009988	1.005	t.03	+.02	-07	728		
50	.009915	<i>=01</i>	-005	1.015	+.77	+145		·
251	.009893	-06	-025	-035	708	-23		
				· · · · · · · · · · · · · · · · · · ·		<u> </u>		
			•					
		· ·						
		·		·	·			
					•			
· · · · · · · · · · · · · · · · · · ·			· ·					<u>-</u>
						·		
· .				<u> </u>				
	 							
EST	2.28-77	3-14-77	5-6-77	5-31-77	6-16-17	6-88-77		
EST	6		<u> </u>		CAC Er	CRC FIT		<u>-</u>



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TWX 910-343-6864

Custor	mer's Name:	NASA		§/0 - 70 ¹	+-35622	S	HEET 169	OF 188
TEST:	ipation Fac	tor @ 1VU-	LAB SUPVA. 23		C.R.C. P/N _ M	183421/01-10)90R	
1 351	ipacion rac	LOI (W INTIZ	ENGR.		CUST. P/N			
TEST NO	XT-1218-A		Q.A. /			236G		
	EMP. 25°С	22 JE		<u></u>		IAS8-32403	<u> </u>	
	OLT. N/A			s	PECIFICATION:		<u>.</u>	
SPECIAL					MIL-C-8342	1, Para. 4.	7.9	
(Air	ol Thermal : to Air) 50	00 Cycles,		125°C	<u>.</u>		4	
	r. per cycl	e)						·
ACCEPTAN	E LIMITS:			E	QUIPMENT USED:		Model No.	ECN No.
15%					Impedance com		G.R. 1654	1331
	500 cycles are no est				Precision dec	ade	G.R. 1413	1387
1	are no est test condit		D.F. HIMIC	י יטר	capacitor	•		
		• •	•			. *	•	
					•			
	PERCENT D	ISSIPATION	FACTOR WITH	1 THERMAL	SHOCK (-5	5°C to +125	s°C)	
S/N	Initial	After	After	After	After	After		
	D.F.	20	140	260	380	500		
·		Cycles	Cycles	Cycles	Cycles	Cycles		
021	.08	.085	.085	.085	5 .08	.095	·	
022	.075	.085	.08	.095	5 .09	.095		
1223	.075	.085	.06	.08	5 .CB5	. 675		
024	.08	.085	.08	.095	0.085			
025	.075	.085	.075	.69	:085	105		
026		<i>.</i> 085	07	080	5 085	,065		
027	.015	.085	.085	.09=	5 .095	.095		
029	.075	.08	.075	.088	5 1 005	.095		
030	.08	.085	.085	.09	.075	.065	·	
031	.075	085	.075	.09	065	.095		·
032	.075	.075	.075	085		.09.5		
033		.08	.075	.085		09		
034	075	.085	.075	.085		.09		
035	.075	.075	.075	.08	.075	.075		
036		.00	.075	.08	.075	.07		
TEST .	2-24-17	3-11-77	5-4-77	5-27-7	1	6-29-77		-
TEST BY	1/3/		\sim	Car.	(%)	Cac		



and the contraction of the contr

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TWX 910-343-6864

	er's Name:	NASA	s/c	<u> </u>	22	s	HEET-170	OF 188
Diss	ipation Fac	tor @ 1KHz	@ 25°C	C.A	.c. P/NM8	3421/01:-10	90 R	
•		. : .			ST P/N	. 1	·······	
				i.	D. NO. 023	6G 8-32403	1	· · · · · · · · · · · · · · · · · · ·
EST NO.	XT-1218-A	· · · · · · · · · · · · · · · · · · ·						
		ISSIPATION After		H THERMAL		5°C to +12	5°C)	·
S/N	Initial D.F.	Arter 20	After 140	After 260	After 380	After 500	• .	
		Cycles	Cycles	Cycles	Cycles	Cycles		
037	.075	.08	.075	.085	.085	.095		
038	.075	.075	.075	.085	.085	.08	<u> </u>	
039	.075	.075	.075	.085	.09	.095		
240	.07	08	015	.09	.095	.105		
041	.065	./	.075	.085	.085	.095		
742	.075	.085	.075	085	.085	.095		
043	.07	.08	,0B	./	.08	.015		
74-4	.07	.075	.075	.08	.075	.085		
045	.07	.085	.075	085	.095	.009		
246	.075	.085	.085		.095	105		
041	01	.CB	.075	.085	.08	.08		
748	./	ODEN	,					
749	.075	.08	. 08	.085	.085	.085		
550	.065	.68	.015	.08	.085	.085	·	
251	.075	.085	.075	.085	.005	.095		
	,	·						
							·	
						- · · · · · · · · · · · · · · · · · · ·		
				<u> </u>		,		
							,	
TEST	8-24-11	3-11-77	5:3-17	5-27-77	6-14-77	6-29-11		
TEST	(\$40)	~ 	//	-~/-/		~ / //		



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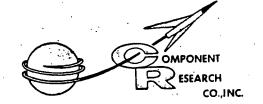
Custom	er's Name:	NASA		/ 0 - 704-	356 2 2	S	HEET 171	OF 188
TEST:	cination F	ector @ 1KH	LAB SUPER		R.C. P/N M	33421/01-10	90 R	,
כוט .	Sipation re	actor (w TKH	ENGR.	CI	JST. P/N			
TEST NO	× Xt-1218-	A	Q.A.	P	ROD. NO0	236G		
TEST TE				P.	0 NON	AS8-32403	!	
TEST V	OLT. N/A		<u></u>	SPI	CIFICATION:			
SPECIAL	NOTES:					_	•	•
		Shock per T	P-1006		MIL-C-83421	, Para. 4.7	.9	•
	to Air) 50							
ACCEPTANO	E LIMITS:	(1 hr. pe	r_cycle)	EQ	JIPMENT USED:	<u>.</u>		50V N
There	are no est	ablished %	D.F. limite	s for In	pedance com	narator	Model No G.R. 165	o. ECN No.
	est condit				ecision dec			
				Te	emperature t	est chamber		130
,			٠.		ermometer	Marshall	SD9-1	1588
	•			''		mai Sila i i	J E-407	1500
						• .		
	PERCENT I	DISSIPATION	FACTOR WIT	H THERMAL	SHOCK (-55°C to +1	25°C)	
S/N	Initial	After	After	After	After	After		
	D.F.	20	140	260	380	500		
·		Cycles	Cycles	Cycles	Cycles	Cycles		
021	.39	.37	.38	4	.44	.42		
023	.39	.38	.39	. 4	.39	.39		
023	.39	37	. 39	. 4	.39	.39		
024	.39	.38	.39	. 4	39	.39		
025	.39	.37	.39	. 4	38	.39		
026	39	.38	;30j	41	at-	-41.		
0.27	.41	.46	.46	5	46	.48		
029	.39	.37	.39	.59	.52	.42		
030	.4	.38	.42	. 44	.38	4		• •
031	.39	.37	.39	. 4	.39	, 39.		·
034	39	<i>ട</i>	.39	.4	.39	. 39		
033	.39	.38	,39	+	.38	.39		-
034	.4		. 4	.41	.39	.39		
035	.39	.39 .38	139	4	.38	39		
036	.38	.36	.38	. 39	.3គ	.43		
TEST DATE	3-1-77	3.14.77	5-5-17	5-31-7		6-27-17		
TEST BY	िक्ष		Trues.			T	-	
0 7	\7\nZ\	(3)	1200	1/3	1 2531	1980		l



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TWX 910-343-6864

Dissip	pation Fact	tor @ lKHz @			i.c. p/n <u>M8</u> st p/n	33421/01-109	90 R	
			· · · · · · · · · · · · · · · · · · ·			236G	· ·	·
rest NO.	XT-1218-A		:			\\$8 - 32403	·	
2/51		DISSIPATION		T	T	5°C to +12	5°C)	
S/N	Initial D.F.	After 20 Cycles	After 140 Cycles	After 260 Cycles	After 380 Cycles	After 500 Cycles		
0.37	.39	,37	.39	. 39	.38	.39		
0.38	.39	38	39	.4	.38	,39		
039	.39	.36	.39	4	.39	43		
240	.4	.38	.4	.4	.39	,39		
241	.39	.35	.44	.4	.39	-39	 	
C42	.4	39	.54	.41	.33	.33		
043	, 39	41	.39	.4	.4	.38		
044	.39		.39	.4	.38	.46		•
745	39	.37	.39	.4	39	.39	<u> </u>	
046	.4	39	.41	.42	.39	11	 	
247	.39	38	-52	.6	.53	.46	<u></u>	
:48	170511							+
049	.4	31	.39	.39	.38	.39	<u> </u>	
050	.39	.36	.39	.41	.52	47		
251	.4-	13/0	-4-		.39	- 7		+
	· · · · · · · · · · · · · · · · · · ·	 		 				
		 						<u> </u>
								
								
						·.		
	·							
PATE	3-1-17	3-14-17	5-5-77	5-31-77	6-16-77	6-21-77		† ·
TEST	And A			130	530	(A)		1



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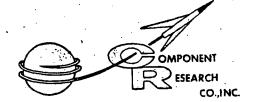
Custon	mer's Name:	NASA	**	s/o - 704.	-35622	SI	HEET 173	OF 188	
TEST:			LAB SUPVOS	C	.R.C. P/N	183421/01-1	0 90R		
Dissi	ipation Fac	tor @ 1KHz	ENGR.		UST. P/N	•			
TEST NO	XT-1218-/	<u> </u>	9.4.	F -	PROD. NO. C)236G	· ·		_ {
	EMP. 125°C	 	- Sec	P.	/O NO	IAS8-32403	. }		_
	OLT. N/A	· · · · ·		SPI	ECIFICATION:		÷		7
SPECIAL							•	•	1
	i Thermal (to Air) 50	Shock per T 00 Cycles	P-1006		MIL-C-83421,	, Para. 4.7	19		İ
-55°	C to +125°	C (1 hr.	per cycle)						_
					UIPMENT USED:		del No.	ECN No.	-
	are no est test condit	ablished % ion.	D.F. limit	Pi	mpedance comprecision deca		R. 1654 R. 1413	1331 1387	-
					apacitor emperature te	set St	atham	1588	į
					amberature t		9-1	1,000	
				TI	nermometer -			1588	
		•	-		•	E-	485	•	
					· · · · · · · · · · · · · · · · · · ·	·	·		اٰ
	PERCENT	DISSIPATION	FACTOR WIT	TH THERMAL	_ SHOCK (-	-55°C to +1	25°C)		
S/N	Initial	After	After	After	After	After			
	D.F.	20	140	260	380	500			
		Cycles	Cycles	Cycles	Cycles	Cycles			_
021	.015	.015	.03	.025		.035			4
022	.015	.015	03	.03	.04	.055		·	_
023	.015	.015	02	.025	.035	.03		ļ	_
024	.015	.02	.025	.03	.035	.045			_
025	.015	.02	.025	.035	.045	.015			_:
0.260	.015	.05	.02	.025	.03	.03		<u> </u>	
027	.015	.02	.03	-025	.03	.035			_!
029	1015	.02	025	.03	.05	.045			_!
030	.015	.03	.03	.035	.045	.035			<u>.</u>
031	:015	.015	.03	.025	.035	.055			_! !
032	.015	.015	.02 .	1025	.035	.045			_
033	.015	015	.02	.0:25	,035	.035		-	_!
034	.0/5	.02	.025	.025	.035	.035			
035	10/5	.015	.015	.015	1	.02			- -
036	.015	.015	.015	.02	.025	.025			_]
				1	T				7
TEST DATE TEST	2.28-11	3.14.77	5.6.11	5:31-77	6-16-77	6-28-11		<u> </u>	



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TWX 910-343-6864

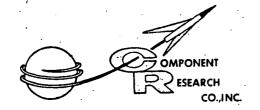
Dis	sipation Fa	ector @ 1KH:	z @ 125°C	I	.C. P/N <u>M83</u> ST P/N	421/01-109	OR	.,,	
			· · · · · · · · · · · · · · · · · · ·		D. NO. 02	236G			
EST NO.	XT-1218-A		:			8-32403	i		
			FACTOR WITH	THERMAL S	AL SHOCK (-55°C to +125°C)				
S/N	Initial D.F.	After 20 Cycles	After 140 Cycles	After 260 Cycles	After 380 Cycles	After 500 Cycles			
037	.015	.015	.025	.025	.035	.045	·		
038	.015	103	.025	.025	.03	.04			
039	015	.015	.03	.03	.035	.04			
240	.015	.02	.035	.035	.055	.095			
241	.015	.015	.025	.025	035	.05			
42	015	.015	.025	.03	.045	.07			
74-3	.015	.025	·02	.025	.03	,035			
44	.015	.015	.C2	.025	.03	.03			
14.5	.0/5	.045	.02	.025	.03.5	.045			
14-6	.015	025	.03	.045	.075	.095	. 1		
747	.0/5	015	.015	.02	.03	.03			
46	.025	PARM					<u> </u>	:	
149	.015	.015	.02	.035	.025	.03			
050	.015	.015	.015	.02	.035	.03	·		
251	.02	.015	.02		.045	.015			
·	·	·							
		·		<u> </u>					
					,				
·	·						·		
	,								
				·	·				
EST ATE	2.28-71	3-14-17	5.6-77	5:31:17	6 15 3 3	6.RR-11		<u> </u>	



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TWX 910-343-6864

Custon	ner's Name:	NASA	/दुर १	5/0 - 70	04-3	5622	SI	HEET 175	OF 188
TEST:			LAB SEPTE	• •	T	.C. P/NM	33421/01-10	90R	
Dissi	pation Fac	tor @ 10KHz	ENGR.	$\overline{\mathcal{V}}$	4	ST. P/N			
TEST NO	× XT-1218-	A	Q.A.		PRO	OD. NO. 02	36G		
TESTITE	MP. 25°C			<u> </u>	P/C	NO. <u>NA</u>	s8-32403	<u> </u>	
TEST V					SPEC	IFICATION:			
SPECIAL]	MII -C-8342	1, Para. 4	7 9	
	l Thermal S to Air) 5	Shock per Ti	P-1006				i ji Turus i t	• 7 • 2	
		(1 hr. pe	er cycle)				•		
ACCEPTANO	E LIMITS:				EQUIF	PMENT USED:		Madali	No. ECN No.
There	are no esta	ablished %	D.F. limits	for	l mp	edance comp	parator	G.R. 16	
	est condit				Pre	cision deca	de capacit		
				:		· .	:		
		•							
				•	1				
									-
		·	·	·		·····			-
	PERCENT D	ISSIPATION	FACTOR WIT	H THERM	AL S	SHOCK (-55	°C to +125°	°C)	
S/N	Initial	After	After	After		After	After		
	D.F.	20	140	260		380	500		
	<u> </u>	Cycles	Cycles	Cycle	S	Cycles	Cycles		
021	.175	.19	195	.18		.2	.34	ļ	
022	.185	.205	.21	.26	<u>, </u>	.26	.4		
023	1	185	185	.20	5	.215	1235		
024	, , , , , , , , , , , , , , , , , , , ,	.195	.21	.37		.25	38		
025	1 '	.165	195	1.73	5	.23	.37		-
026		.19	.18	.23	3	.25	.265		
037	.16	18	.185	20	25	.21	.215	ļ	<u> </u>
029	17	.185	.215	150	7	3	.3/		
030	,205	.225	.26	1,34	<u> </u>	.34	.33	ļ	
031	.11	.165	.185	-7	3	,24	.37	<u> </u>	
032	165	.115	.185	رجه	15	.21	-3		
093		.18	185	حب	_	.21	.28	,	-
034		,205	.21	120	25	.225	.32	<u> </u>	
035	.155	.17	.175	.2:	3	.185	.19	<u> </u>	
036	.145	.165	115	.16	5	.195	.22		
TEST DATE	2-24-11	3-11-17	5-3-77	5-27	77	6-14-77	6-29-11		
TEST BY	Cac	(GRC)	Crc	6	/-/-	Coc.	1/1/2		
L.,	- 120			Cc			1200/	L	<u> </u>



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TWX 910-343-6864

GENERAL DATA SHEET

Diss	ipation Fa	ctor @ 10KI	lz @ 25°C	· · · · · · · · · · · · · · · · · · ·	.c. P/N <u>M8</u>	3421/01-10	90 R	· ·
. :					T P/N D. NO. 02	36G		
EST NO.	XT-1218-A		: •			58 - 32403	· · · · · · · · · · · · · · · · · · ·	 .
. 1			FACTOR WIT				05%0)	======
s/N	Initial	After After	After	After	After	55°C to +1	25·6)	
	D.F.	20 Cycles	140 Cycles	260 Cycles	380 Cycles	After 500 Cycles		
037	.165	.185	.165	.23	.27	.34		
038	.16	.165	.185	.2	څ چه	. 260		
039	.11	185	.195	.26	.28	.38_		
240	.18	.205	.215	265	.28	,49		
24-1	155	.19	.195	.23	.24	.36		
042	.175	.195	.205	.25	.26	. 33		
7.43	.165	.185	.195	.21	.215	.21		
744	.16	18	.16	.21	.22	٠,૩		
145	.165	.195	.2	.24	.265	.285		
146	.185	.21	.265	.35	.33	.49		
241	.155	.18	.18	.195	.185	.2		
14-8	.3 -	ODEN						
349	.155	.175	./8	.195	.21	.24		
50	./55	115	.18	,3	.225	.22		
251	.165	185	.2	24	.26	. 4		
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					(Q)			
EST	<u> </u>	CACI		Ser Silv	257	CRI		

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TWX 910-343-6864

Custo	omer's Name	: NASA	Caron	/0 - 704-	35622	,	SHEET 177	OF 188
TEST:			LAB SUEVE.	C	R.C. P/N M	83421/01-1		, .
l lok	sipation F	actor @	ENGR.	-, /	UST. P/N			
	XT-1218-A		Q.A.		ROD. NO.			
TEST TE			-		/O NO.	NAS8-32403	. ;	
TEST V			1		ECIFICATION:			· ·
	NOTES:	· · · · · ·			WIL C 92/2	1 Dama J	7.0	
	l Thermal		P-1006		MIL-C-8342	, Para. 4	•/•9	
	to Air) : to +125°C		r systal					
*,	,	(1 m. pe	er cycle)			•		
ACCEPTANO	E LIMITS: .			EC	UIPMENT USED:		Model No.	ECN No.
	are no est		D.F. limit		mpedance com		G.R. 1654	1331
this t	est condit	ion.			recision dec	ade	G.R. 1413	1387
	•	•			apacitor emperature t	est	Statham	130
				c	hamber	•	SD9-1	• • •
				Τ	hermometer -	Marshall	J E-485	1588
			٠					
	PERCENT I	DISSIPATION	FACTOR WI	TH THERMA	L SHOCK (-55°C to +	125°C)	
S/N	Initial	After	After	After	After	After		
	D.F.	20	140	260	380	500	,	
		Cycles	Cycles	Cycles	Cycles	Cycles		
031	. 49	.48	.49	.52	.55	.57	<u> </u>	<u> </u>
022	.5	-5	.5	45.	.53	.51		
023	.49	.48	.49	.51	.58	,49		
024	5	. 5	رح ر	. 52	.51	.5'		
025	. 49	.51	.49	.49	.48	,5		
026	.49	.52	.49	.52	.53	54		
021		.5	.51	.56	54	.54		
029		40	5	.66	.60	.63		
030	.52	.52	.56	.62	1.61	.60		
031	.49	.52 .53	.49	.52	.49	.51		
C3A	.49	.5	.49 .49 .5	.52 .52	.55	.51 .5+ .5		
CSS	:49	,51	. S	.53	,49	.5		
C54	.51	.51	.51	.54	.61 .49 .55 .49 .51	. 52		
035	.48	.49	.47	.5	.49.	.48		
036	.47	.46	.46	.48	.5/	55		
TEST DATE	3-1-17	3-14-17	5:5:17	531-7	7 6-17-71	6-27-77		
TEST .	3 (%)	(Sp)		(30)		<u> </u>	·	
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~~ <del>~~</del>	<del>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</del>	<del></del>	<u> </u>		<del>                                     </del>



or of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the contraction of the con

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TWX 910-343-6864

Custome	er's Name:	NASA	\$/0	<del>-</del> 704-3562	<del></del>		HEET 178	OF 188						
	ipation Fac	ctor @ 10KHz	z @ <b>-</b> 55°C	cus	C.R.C. P/NM83421/01-1090 R  CUST P/N PROD. NO0236G									
EST NO.	XT-1218-	4		P/0	NO	NAS8-32403								
	PERCENT I	DISSIPATION	FACTOR WIT	TH THERMAL	SHOCK	(-55°C .to	+125°C)							
S/Ņ	Initial D.F.	After 20 Cycles	After 140 Cycles	After 260 Cycles	After 380 Cycles	After 500 Cycles								
037	49	.49	.49	.52	.51	.52								
038	.48	.51	.48	.51	.5	.51								
039	5	.52	.51	.55	-53	.61		<u> </u>						
040	.52	.5+	. <i>5</i> 3	.5/	.51	.56		-						
041	.49	.5	.49	.5	55	.52	<u>'</u>							
042	.5	.5	.54	.54	.49	.51								
04-3	.49	.55	.49	.5/	.57	.47	· · · · · · · · · · · · · · · · · · ·	<del> </del>						
044	.49	.55	.51	.53_	.చ	158								
045	.49	.5	.56	52	.52	52								
046	.52	.54	. <u>.5</u> 3	.56	.53	, 6		<del> </del>						
740	.49	.49	52	.61	155	.55	<u> </u>							
048	10			حد	/ -	· ·								
049	.49	. 49	.48	.5	.49	.5		<u> </u>						
050	4-8	.40	.49	.51	.57	.54								
051	.49	.5	.5/_	.52	.51	, <u>5</u> 5								
			<u> </u>	<u> </u>										
			· · · · · · · · · · · · · · · · · · ·					<del>                                     </del>						
			· · · · · · · · · · · · · · · · · · ·				<u> </u>	<b>†</b>						
	·		<u> </u>					<del>                                     </del>						
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				•				1						
	·							٠.						
TE-ST DATE	3.1.77	3-14-77	5-5-77	5-31-77	6-16-77	6-21-17								
EST	<i>े</i> दुन्ते	-/CFC	CRC	Car	(Sec)	199								



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TWX 910-343-6864

Custor	mer's Name:	NASA		/0 - 704	+ <b>-</b> 356	622	SI	HEET 179	OF 188					
TEST:	iAion F		LAB SURVE		C.R.		83421/01-10		, .					
@ 10	ipation Fac KHz	τοτ	ENGR.			Γ. P/N								
	XT-1218-	Α	9.A.		PRO		236G							
	MP. 125°C			L_		<u>.                                </u>	458-32403	1	· .					
TEST V				s	SPECIF	ICATION:								
SPECIAL					MiL-C-83421, Para. 4.7.9									
		hock per TF	?-1006 -55°C to +1:	25.0	- ·		, rata. 7.	7.3						
	(1 hr. per		->> 6 10 +1.	25 6			•							
	E LIMITS:	<del></del>	<u> </u>	E	EQUIPA	MENT USED:	<del></del> ,		==					
There	are no est	ahlished %	D.F. limits	s for	l mn	edance con		Model No. G.R. 1654	ECN No. 1331					
	est condit		J				de capacit		,,,,,					
1 .	:	• •		· .	G.R. 1413 1387 Temperature test									
		·	•				est :ham SD9 <i>-</i> l	, .	130					
		•	•				Marshall J	E-485	1588					
		•							·					
		, , , , , , , , , , , , , , , , , , ,												
	PERCENT D	ISSIPATION	FACTOR WITH	H THERMA	L SF	IOCK _ (-	-55°C to +1	·25°C)	·					
S/N	Initial	After	After	After		After	After							
	D.F.	20 Cycles	140 Cycles	260 Cycle	- 1	380 Cycles	500 Cycles							
		ļ			<del></del>		· · · · · · · · · · · · · · · · · · ·							
021	.045	.06	-07	.09:	- 1	. /	.18							
022	.055	.075	.095	./3:	1	./35	.285		· · · · · · · · · · · · · · · · · · ·					
023	.045	.055	.07	OB		.09	145							
024	-065	.08	./3	./35		./3	.25	<u> </u>	<u> </u>					
025		.065	.095	.155	· ·	. 155	,3%							
0.26		.065	1075	105	5	.//	.13		· -					
027	.045	.06	.07	07		.095	.095							
029	.065	.075	.//	.16		,16	, 23	,						
030		.115	-17	198		.2	. 2							
031	.055	.015	.015	115		.125	. 3		-					
032	1	.055	.07	105		1105	1195	<del> </del>						
C33		.065	.085	.//5		.115	12		-					
034	.065	.085		./25		ر ع	22							
03.5	į.	.055	.055	.05		.075	.085		<u> </u>					
036	.036	.045	.05	.05	ত্	.055	.14							
TEST DATE	2-28-77	3-14-77	5.6.77	5.31-	72	6.16.17	6-28-11							
TEST BY	(GC)	Lago P. S. S. S. S. S. S. S. S. S. S. S. S. S.	\( \hat{C}^{\hat{Q}} \)	(Sec.)	T	Caro	CACI							



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Custon	mer's Name:	NASA	s/0	<b>-</b> 704-3562	22	<b>.</b>	SHEET 180	OF 188
Dissi	pation Fac	tor @ 10KHz	@ +125°C	cus	ST P/N	83421/01-10 236g		
TEST NO.	XT-1218	-A	:			AS8-32403		
	PERCENT D	ISSIPATION	FACTOR WIT	H THERMAL S	SHOCK (-	55°C to +12	25°C)	
S/N	Initial D.F.	After 20 Cycles	After 140 Cycles	After 260 Cycles	After 380 Cycles	After 500 Cycles		
037	.075	.07	.09	.115	.//	29		
038	.04	115	.065	.085	.09	.225	<u> </u>	
039	.06	075	105	.155	.15	.26		
040	.075	.,'	./3	.185	.185	.47		
04-1	.045	.055	.085	.10.5	.14	.3		
042	.065	075	105	.145	.14	.39		
043	.063	.13	.08	./	.105	117		
044	.055	.07	075	.105	.125	.145.		
045	.05.5	175	.095	.12	125	122		
046	.07	. /.	.16	.185	,22	.7		
041	.045	.055	.065	.075	,09	145		<u> </u>
048	.08							
049	.045	.055	.065	.085	.09	.185		
050	.055	.055	.065	.085	.095	.14		
051	.055	.065	/	135	14	.47		
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TEST DATE	2.28-71	3-14-17	55-17	5-31-17		6-28-17		
TEST BY	Coc	CEC	(B)	(Ga	CACI	CRC		



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Custo	mer's Name:	NASA		704	-35622	SI	HEET 181	OF 188
TEST:	•		LAB SUPVR.		C.R.C. P/N	M83421/01-10	90R	, .
E	.S.R		ENGR.	1	CUST. P/N			
TEST NO	· XT-1218-A		0.4.		PROD. NO	0236G	,	
	мр. 25°C	·	Jui		P/0 NO	NAS8-32403	<u> </u>	
TEST V	OLT. N/A		<u>'</u>		SPECIFICATION:			
SPECIAL					• •			•
(Air	to Air)	Shock per 500 Cycles 1 hr. per	•				t	:
	E LIMITS:				EQUIPMENT USED:		Model N	o. ECN No.
	are no esta est conditi	blished E.Son.	S.R. limits	for	E.S.R. Meter Cable assemb		s 273	1130 1130
	•					-		
	•			.	.*			
		•	v			·		
	<u>r</u>				·			
ļ.		TH THERMAL		55°C to	<del></del>		·	·
S/N	Initial	After 20	After 140	After 360	After 380	After 500		
	E.S.R.	Cycles	Cycles	Cycle	es   Cycles	Cycles		
	2	<u> </u>	- (		12	12-		
021		1.2	1.3	1.2	2.3	3.8		
023	1	1.5	1.7	2.4	3.1	4.5		<u> </u>
023		1.2	1.2	1.5	1.8	20		
024	1.4-	1.4	1.7	2.6	2.5	3.5		
025	· • • • • • • • • • • • • • • • • • • •	1.3	1.5	2.3	7./	4.4		
026	1.0	1.2		1.4	2.4	2.4		
027	1	1.5	1.2		1.6	1.4		
029	1.3	2.0	1.9	2.6	3.4	3.3		
Q30	1.60	I	2.5	3.5		3.6		,:
031	/./	1.3		2.0	2.8	3.0		<u> </u>
032	1.1	1.3	1.3	1.9	7.9	3.0		-
053	1.2	·	1.4	2.0	2./	2.6		
034	1.4	1.6	1.7	2.0	2.4	3.4		
035	1.0	/./.	1:0	1.2	1.4	1.3		
TEST	,	1.0	1.0	1.3	1.5	2.2		
DATE	2.25-17	3-10-17	5-4-71	5-27-1		6-29-17		
TEST BY	\(\frac{1}{2}\)	(\$\frac{\hat{\chi_{2}}{\chi_{2}}}{\chi_{2}}\)						



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E.	S.R. @ 25°C	C				421/01-1090	R	
	,				OD. NO. 023		<del></del>	<del></del>
EST NO.	XT-1218-A	• •	;	P/C	NO. NO. NAS	8-32403		
		/ITH THERMAL	I SHUCK (	(-55°C to +				
s/N	Initial	After	After 140	After	After	After		Γ.
	E.S.R.	20 Cycles	Cycles	260 Cycles	Cycles	Cycles	1	
		-2-				-C	<u> </u>	ļ ·
R317	1.2	1.4	1.6	2.3	2.7	3.8	<del>                                     </del>	<del> </del>
038	1.0	1./	1.1	1.6	2.1	2.6	<u> </u>	<del>-</del>
030	1.3	1.4	1.7	2.9	3.3	4.2	<del></del> '	
040	1.6	1.8	2.1	3.7	4.1	6.6	<b> </b>	<u> </u>
041	1.0	1.2	1.4	2.3	2.4	3.7	<u>                                     </u>	
043	1.3	1.5	1.6	2.9	3.0	3.6	<u> </u>	
043	1.2	1.3	1.4	1.8	1.9	1.7	<b></b> '	
044-	1.1.	1.2	1.3	2.0	2.1	2.9	<b> </b> '	<u> </u>
045	1.2	1.4	1.6	2.3	2.8	2.9	<u> </u>	
0460	1.5	1.7	2.5	3.9	3.7	6.5	<u> </u>	
047	1.0	1.2	1.2	1.5	1.4	1.3	<u> </u>	
048	10.0	OBEN						
049	1.0	1.1	1.1	1.5	1.7	2.3		
050	1.1	1.2	1.2	1.7	1.9	1.9		
051	1.2	1.3	1.6	2.6	<i>3</i> .3	4.8		
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		· · ·	<u> </u>	<b> </b>				
				<del></del>	<b></b>		[	
TEST		3-10-11	5.4.77	6-2-77	6-14-77	1	·'	
DATE L	ククヘーファー	(スー//)。/ /	バス・ル・ファー	・ ムーン フフ・	16 14 77	6-29.11		1



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TWX 910-343-6864

Custo	mer 's	.Name:	NAS	A	٠,	s/	0,-	704 <b>–</b> 35	622			· · · sı	HEET 183	0	F 188	
TEST:	1 -				LAB	SUPVR.	É			N M8						
	eal T ine L	est eak Te	st)		ENGR	. 1/1	17	CU	ST. P	/N						
TEST NO					Q.A.		<i>&gt;</i>	PR	OD. 1	NO 02	36G	•				
TEST T						SIL		P/0	O NO.	NO 02 NA	s8-32	+03	1			
TEST V					7. 1		•		IFICAT							
SPECIAL				· ·	+	,				. 0-1			· .			
(Air	to A	ermal ir) +125°C	500 C	ycles		06 cle)		.   -	MIL-(	C <b>-</b> 83421	, Par	a. 4.7	7.5			
ACCEPTAN	CE LIMI	TS:						EQUI	PMENT	USED:		Model	No.	ECN	No	
Lea	kage	not to	exce	ed i :	x 10	6 atm/c	c/se	c. Fi	ne l	eak det	ector	DuPor 120B	nt-24-	651	,,,,,,	
	٠.	•		•	• •					,				• •		
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	•															
						·.			•	٠				,		
<del></del>	Ini	tial	Aft 20 c	er voles	Af	ter cycles	260	fter	4380	fter cycles	Af	ter	4	<del>i</del>		
S/N	1x10 ⁻⁶ 1x10 ⁻⁶		1X	1x10 ⁻⁶ 1x10 ⁻⁶			1X	10-6	1X10	<b>-</b> 6						
	Pass	Fail						7	Pas	ss Fail	Pass	Fail				
021			1		_/		1		/		~				•	
023	1		<b>A</b> .		1				1		-					
023												-	·			
024											/					
025			<u> </u>	· ·	<del>                                     </del>			1.						$\neg \uparrow \neg$		
026	<del>                                     </del>	<del> </del> -				1		<u> </u>						_		
027		<del>                                     </del>	<del>    .</del>		$\vdash$	+		+	+-+			<del> </del>		_		
/	-		<del>   -</del>		-	1	-	1.	†	<del>-  </del>			· ·	$\dashv$		
029	-	<del>                                     </del>	<del>                                     </del>	<u> </u>	-	1.		<del>                                     </del>	+ +	<del> </del>		-		-		
030			<del>                                     </del>			1.	<del>                                     </del>	+			<del>                                     </del>			-	<del></del>	
031	-	<del> </del>	<del>                                     </del>	<u> </u>		-	$\vdash \vdash$	+	++		1	ļ	<del> </del>			
032		<del> </del>	<del>                                     </del>		├-├-		-		<del>   </del>			<b></b>				
033	<del>├-</del> ├-				- -		-	4	<del>                                     </del>	·				+		
034					<u> - -</u>	ļ		1	$\sqcup$	<u> </u>		ļ. <u></u>				
035	1		¥.				<b>Y</b>	<u> </u>	1 1			<u> </u>				
036	1		/		/		_		1		/					
TEST DATE	2.28	3-7 <i>7</i>	3-16	-11	5-10	2-77	6-2	-77	6-1	5-77	7-1-	77				
TEST BY		- '			/	٩	,	(P)		ici (		\$\$\frac{\hat{\partial}{\partial}}{\partial}				
	/63	-		7-1	$\neg \checkmark$	<u> </u>	$\overline{}$	की -	$\neg \checkmark$	71		<del>?/</del>				



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TWX 910-343-6864

Custon	ner's	Name:	NA:	SA			s/0	- ⁻ 7	04-	3562	2					s	HEET	184	OF.	188
	l Tes		<b></b> .				• .	•	V	C.F				342	1/0	01-109	90 R			
	ne Le			•	,	<del></del>		<u>.                                    </u>		PRO	DD.	NC	002	36G						
TEST NO.					+				•				NA				·			
	<b></b>	tial	20	ter	14	Α.Τ ΙΟ	ter بر	2	60	<u>ر ۲</u>	7	80	ter		500	ter	· ·			
s/N		0-6	<del></del>	10 ⁻⁶	1	Χŀ	0-6	13	x 10	-6	.;	χI	o ⁻⁶		IXI	10 ⁻⁶			1	
· -	Pass	Fail	Pass	Fail	Pass		Fail	Pa	ss F	ail				Pa	55	Fail				
037	1	<u> </u>	.4		14			_/			_ (	·.		. 4		<u> </u>			ــــــ	·
038	1		1	<u> </u>			•			•	<u>L</u>									·-·
039				<del> </del>	$\sqcup$						-		<u> </u>	_			•		-	
040					11						<u> </u>	Ŀ	<u> </u>						<u> </u>	
041		<b> </b> -		·			·			<del></del> -	_		ļ				· ·		<del> </del>	
042				<u> </u>	$\bot$					· .			<u>.</u>	Щ		· ·	<del></del> :		-	
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#### VI. FAILURE ANALYSIS

Out of the one hundred fifty (150) capacitors subjected to 500 thermal shock cycles one (1) capacitor was cited as a failure. This capacitor (M83421/01-1090R serial no. 048) was found to have an initial Dissipation Factor measurement at 1 KHz of .1% (25°C. This measurement was within the limit of .15%, set forth in MIL-C-83421/1. An initial Dissipation Factor reading at 10 KHz (25°C, however, measured .3% and an initial Equivalent Series Resistance reading measured ten (10) ohms. These two initial readings revealed that the capacitor possessed terminations of poor quality. Due to a technician's error this unsuitable capacitor was not excluded from the test. The inclusion of this initially defective capacitor demonstrated that measuring Dissipation Factor of capacitors at 1 KHz is not a sufficient test when attempting to determine termination quality.

One capacitor (M83421/01-1186R serial no. 117) fell out of specification after twenty (20) cycles by exhibiting a low Insulation Resistance. Upon conclusion of the thermal shock testing, the capacitor was dissected for analysis. It was revealed that the capacitor had undergone excessive heating during induction soldering of the end seals to the case. This caused a melting of the polycarbonate film and subsequent weakening of the dielectric.

#### VII. CONCLUSIONS AND RECOMMENDATIONS

Subjecting metallized polycarbonate film capacitors to 500 thermal shock cycles, whether they be normal or accelerated cycles, is indeed a rigorous test procedure. Normally, capacitors of this type are expected to survive five (5) and sometimes ten (10) thermal shock cycles.

To ensure that capacitors are capable of withstanding shock cycling, proper screening methods must be used. Dissipation Factor and Equivalent Series Resistance measurements are taken to determine the quality of capacitor end terminations. Standard procedure as is specified in MIL-C-83421/1 is to take Dissipation Factor readings only at 1 KHz. The occurrence in this program of a capacitor which measured within specification at 1 KHz, but exhibited a poor Dissipation Factor at 10 KHz, and had a low Equivalent Series Resistance and which subsequently opened, demonstrates that Dissipation Factor readings at 1 Khz do not represent an adequate screening process.

In order to properly screen capacitors for thermal shock cycling all capacitors were one hundred (100%) percent tested for Equivalent Series Resistance. All capacitors were measured for Dissipation Factor at both one (1) and ten (10) KHz. A four terminal bridge system was used at high and low temperatures to compensate for test lead lengths present between environmental chambers and the impedance comparator.

For optimal capacitor performance under thermal shock stress it is recommended that the above testing method be instituted.

The results of this program demonstrate that by implementing certain design modifications the thermal properties of metallized polycarbonate film capacitors can be greatly improved. The success of this program has brought about the introduction of a capacitor which far exceeds present state-of-the-art capabilities.

#### VIII. ACKNOWLEDGMENTS

Mr. David Kellerman was instrumental in the design of this research project. He participated in supervising and establishing design solutions and testing criteria. Mr. John Conklin, as program manager at Component Research Co., organized all research and testing activities. Sylvia Fiacre supervised all documentation.

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